United States
Department of
Agriculture

Rural
Electrification
Administration

REA Bulletin 50-3
Standard D 804

Specifications and Drawings for 12.5/7.2 kV Line Construction

UNITED STATES DEPARTMENT OF AGRICULTURE
Rural Electrification Administration

May 9, 1983

REA Bulletin 50-3 (D-804)

SUBJECT: Specifications and Drawings for 12.5/7.2 kV Line Construction

I. Purpose: To announce the issuance of REA Standard D-804, Specifications and Drawings for 12.5/7.2 kV Line Construction.

II. General: REA has revised REA Form 804, Specifications and Drawings for 7.2/12.5 kV Line Construction (August 1962), and it has been renamed REA Standard D-804, Specifications and Drawings for 12.5/7.2 kV Line Construction.

Changes include the addition of post insulator drawings and the correction of minor errors. Some drawings were revised for conformance with the latest edition of the National Electrical Safety Code.

Jack Van Mark

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Acting Administrator

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SPECIFICATIONS FOR CONSTRUCTION

1. General

All construction work shall be done in accordance with the staking sheets, plans and specifications, and the construction drawings.

The 1981 or latest edition of the National Electrical Safety Code (NESC), ANSI C2, shall be followed except where local regulations are more stringent, in which case local regulations shall govern.

2. Distribution of Poles

In distributing the poles, large, choice, dense poles shall be used at transformer, dead-end, angle, and corner locations.

3. Pole Setting

The minimum depth for setting poles shall be as follows:

Length of Pole(Feet)	Setting in Soil(Feet)	Setting in All Solid Rock(Feet)
20	4.0	3.0
25	5.0	3.5
30	5.5	3.5
35	6.0	4.0
40	6.0	4.0
45	6.5	4.5
50	7.0	4.5
55	7.5	5.0
60	8.0	5.0

"Setting in Soil" depths shall apply:

a. Where poles are to be set in soil.

b. Where there is a layer of soil of more than two (2) feet in depth over solid rock.

c. Where the hole in solid rock is not substantially vertical or the diameter of the hole at the surface of the rock exceeds approximately twice the diameter of the pole at the same level.

"Setting in All Solid Rock" depths shall apply where poles are to be set in solid rock and where the hole is substantially vertical, approximately uniform in diameter and large enough to permit the use of tamping bars the full depth of the hole.

Where there is a layer of soil two (2) feet or less in depth over solid rock, the depth of the hole shall be the depth of the soil in addition to the depth specified under "Setting in All Solid Rock" provided, however, that such depth shall not exceed the depth specified under "Setting in Soil."

On sloping ground, the depth of the hole shall be measured from the low side of the hole.

Poles shall be set so that alternate crossarm gains face in opposite directions, except at terminals and dead ends where the gains of the last two (2) poles shall be on the side facing the terminal or dead end. On unusually long spans, the poles shall be set so that the crossarm is located on the side of the pole away from the long span. Where pole top insulator brackets or pole top pins are used, they shall be located on the opposite side of the pole from the gain.

Poles shall be set in alignment and plumb, except at corners, terminals, angles, junctions, or other points of strain, where they shall be set and raked against the strain so that the conductors are in line.

Poles shall be raked against the conductor strain not less than 1-inch for each 10 feet of pole length nor more than 2 inches for each 10 feet of pole length after conductors are installed at the required tension.

Pole backfill shall be thoroughly tamped in full depth. Excess dirt shall be banked around the pole.

Poles which have been in storage for more than 1 year from the date of treatment shall be ground line treated when installed.

4. Grading of Line

When using high poles to clear obstacles such as buildings, foreign wire crossings, railroads, etc., there shall be no upstrain on pin-type or post-type insulators in grading the line each way to lower poles.

5. Guys and Anchors

Guys shall be placed before the conductors are strung and shall be attached to the pole as shown in the construction drawings.

All anchors and rods shall be in line with the strain and shall be installed so that approximately 6 inches of the rod remain out of the ground. In cultivated fields or other locations, as deemed necessary, the projection of the anchor rod above earth may be increased to a maximum of 12 inches to prevent burial of the rod eye. The backfill of all anchor holes must be thoroughly tamped the full depth.

After a cone anchor has been set in place, the hole shall be backfilled with coarse crushed rock for 2 feet above the anchor tamping during the filling. The remainder of the hole shall be backfilled and tamped with dirt.

6. Locknuts

A locknut shall be installed with each nut, eyenut or other fastener on all bolts or threaded hardware such as insulator pins and studs, upset bolts, double arming bolts, etc.

7. Conductors

Conductors must be handled with care. Conductors shall neither be trampled on nor run over by vehicles. Each reel shall be examined and the wire shall be inspected for cuts, kinks, or other injuries. Injured portions shall be cut out and the conductor spliced. The conductors shall be pulled over suitable rollers or stringing blocks properly mounted on the pole or crossarm if necessary to prevent binding while stringing.

The neutral conductor should be maintained on one side of the pole (preferably the road side) for tangent construction and for angles not exceeding 20°.

With pin-type or post-type insulators, the conductors shall be tied in the top groove of the insulator on tangent poles and on the side of the insulator away from the strain at angles. Pin-type and post-type insulators shall be tight on the pins and brackets, respectively, and the top groove must be in line with the conductor after tying.

For line angles of 0° to 5° in locations known to be subject to considerable conductor vibration, insulated brackets (material item da) may be substituted for the single and double upset bolts used for supporting the neutral and secondary conductors.

All conductors shall be cleaned thoroughly by wirebrushing before splicing or installing connectors or clamps. A suitable inhibitor shall be used before splicing or applying connectors over aluminum conductor.

8. Splices and Dead Ends

Conductors shall be spliced and dead-ended as shown on the construction drawings. There shall be not more than one splice per conductor in any span and splices shall be located at least 10 feet from the conductor support. No splices shall be located in Grade B crossing spans and preferably not in the adjacent spans. Splices shall be installed in accordance with the manufacturer's recommendations.

9. Taps and Jumpers

Jumpers and other leads connected to line conductors shall have sufficient slack to allow free movement of the conductors. Where slack is not shown on the construction drawings, it will be provided by at least two (2) bends in a vertical plane, or one (1) in a horizontal plane, or the equivalent. In areas where aeolian vibration occurs, special measures to minimize the effects of jumper breaks shall be used as specified.

All leads on equipment such as transformers, reclosers, etc., shall be a minimum of #6 copper conductivity. Where aluminum jumpers are used, a connection to an unplated bronze terminal shall be made by splicing a short stub of copper to the aluminum jumper using a compression connector suitable for the bimetallic connection.

10. Hot-Line Clamps and Connectors

Connectors and hot-line clamps suitable for the purpose shall be installed as shown on the guide drawings. On all hot-line clamp installations, the clamp and jumper shall be installed so that they are permanently bonded to the load side of the line, allowing the jumper to be de-energized when the clamp is disconnected.

11. Surge Arrester Gap Settings

The external gap electrodes of surge arresters, combination arrester cutout units, and transformer mounted arresters shall be adjusted to the manufacturer's recommended spacing. Care shall be taken that the adjusted gap is not disturbed when the equipment is installed.

12. Conductor Ties

Hand-formed ties shall be in accordance with construction drawings. Factory-formed ties shall be installed in accordance with the manufacturer's recommendations.

13. Sagging of Conductors

Conductors shall be sagged in accordance with the conductor manufacturer's recommendations. All conductors shall be sagged evenly. The air temperature at the time and place of sagging shall be determined by a certified thermometer.

The sag of all conductors after stringing shall be in accordance with the engineer's instructions.

14. Secondaries and Service Drops

Secondary conductors may be bare or covered wires or multi-conductor service cable. The conductors shall be sagged in accordance with the manufacturer's recommendations.

Conductors for secondary underbuild on primary lines will normally be bare, except in those instances where prevailing conditions may limit primary span lengths to the extent that covered wires or service cables may be used. Service drops shall be covered wire or service cable.

Secondaries and service drops shall be so installed as not to obstruct climbing space. There shall not be more than one splice per conductor in any span, and splices shall be located at least 10 feet from the conductor support. Where the same covered conductors or service cables are to be used for the secondary and service drop, they may be installed in one continuous run.

15. Grounds

Ground rods shall be driven full length in undisturbed earth in accordance with the construction drawings. The top shall be at least 12 inches below the surface of the earth. The ground wire shall be attached to the rod with a clamp and shall be secured to the pole with staples. The staples on the ground wire shall be spaced 2 feet apart, except for a distance of 8 feet above the ground and 8 feet down from the top of the pole where they shall be 6 inches apart.

All equipment shall have at least two (2) connections from the frame, case or tank to the multi-grounded neutral conductor.

The equipment ground, neutral wires, and surge-protection equipment shall be interconnected and attached to a common ground wire.

16. Clearing Right-of-Way

The right-of-way shall be prepared by removing trees, clearing underbrush, and trimming trees so that the right-of-way is cleared close to the ground and is the width specified, except that low growing shrubs which will not interfere with the operation or maintenance of the line shall be left undisturbed if so directed by the owner. Slash may be chipped and blown on the right-of-way. The landowner's written permission shall be received prior to cutting trees outside the right-of-way. Trees fronting each side of the right-of-way shall be trimmed symmetrically unless otherwise specified. Dead trees beyond the right-of-way which would strike the line in falling shall be removed. Leaning trees beyond the right-of-way, which would strike the line in falling and which would require topping if not removed, shall either be removed or topped, except that shade, fruit, or ornamental trees shall be trimmed and not removed, unless otherwise authorized.

17. Structures Exceeding 200 Feet in Height and Structures in the Vicinity of Airports

The Federal Aviation Administration (FAA) requires (14 CFR 77) that in cases where structures or conductors will exceed a height of 200 feet, or are within 20,000 feet of an airport, the nearest regional or area office of the FAA be contacted and FAA Form 7460-1 be filed if necessary.

INDEX OF CONSTRUCTION DRAWINGS

Single-Phase:

A1, A1A	Single Primary Support
A1-1, A1-1A	Double Primary Support
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A3	Primary 1-Phase 20° to 60° Angle
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A5	Deadend (Single)
A5-1, A5-2, A5-2A	Primary, Single Phase Tap
A5-3, A5-4	Primary, Single Phase Tap
A6	Vertical Deadend (Double)
A7, A7-1	Crossarm Construction Deadend (Single)
A8	Crossarm Construction Deadend (Double)
A9	Crossarm Construction Double Line Arm
A9-1	Crossarm Construction Single Line Arm
A22	Crossarm Construction Single Phase Junction

Two-Phase:

B1, B1A	Crossarm Construction Single Primary Support
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B2	Crossarm Construction Double Primary Support
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B5-1, B5-1A	Vertical Construction Deadend (Single)
B7, B7-1	Crossarm Construction Deadend (Single)
B8	Crossarm Construction Deadend (Double)
B9	Crossarm Construction Double Line Arm
B9-1	Crossarm Construction Single Line Arm
B9-2	Crossarm Construction Double Line Arm
B9-3	Crossarm Construction Single Line Arm
B22	Crossarm Construction Single Phase Junction

Three-Phase:

C1, C1A	Crossarm Construction Single Primary Support
C1-1, C1-1A	Crossarm Construction Double Primary Support
C1-2	Crossarm Construction (Large Conductors)
C1-3	Crossarm Construction Double Primary Support (Large Conductors)
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C8-3	Crossarm Construction Deadend (Double) Large Conductors with Unbalanced Loads
C9	Crossarm Construction Double Line Arm
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DC-C1-1A	Crossarm Construction Double Circuit Double Primary Support 3 Crossarm Type
DC-C2	Crossarm Construction Double Circuit Double Primary Support 2 Crossarm Type
DC-C2-1	Double Circuit Crossarm Construction 2 Crossarm Type
DC-C3	Double Circuit, Vertical Construction
DC-C4-1	Double Circuit, Vertical Construction
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DC-C25	Crossarm Construction Double Circuit 3-Phase Tap

Single-Phase (Post Insulator):

A1P, A1AP	Single Primary Support
A1-1P, A1-1AP	0° to 5° Angle, Double Primary Support
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A9P	Crossarm Construction Double Support
A9-1P	Crossarm Construction Single Line Arm
A22P	Crossarm Construction Single-Phase Junction

Two-Phase (Post Insulator):

B1P, B1AP	Crossarm Construction Single Primary Support
B1-1P, B1-1AP	Crossarm Construction Double Primary Support
B2P	Crossarm Construction Double Primary Support
B9P	Crossarm Construction Double Line Arm
B9-1P	Crossarm Construction Single Line Arm
B9-2P	Crossarm Construction Double Line Arm
B9-3P	Crossarm Construction Single Line Arm
B22P	Crossarm Construction Single-Phase Junction at 0° to 5° Angle

Three-Phase (Post Insulator):

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C1PL	Crossarm Construction Single Primary Support
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C9-1P	Crossarm Construction Single Line Arm
C9-2PL	Crossarm Construction Double Line Arm
C9-3PL	Crossarm Construction Single Line Arm

Three-Phase, Double Circuit (Post Insulator):

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Guy Assemblies:

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E2-1, E2-2, E2-3	Single Overhead Guy, Through Bolt Type
E3-2, E3-3, E3-10	Single Down Guy, Wrapped Type
E4-2, E4-3	Single Overhead Guy, Wrapped Type
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M3-2A, M3-3A	2 or 3 Sectionalizing Disconnect Switches
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M3-10, M3-41	One Sectionalizer or Oil Circuit Recloser
M3-11, M3-12	2 or 3-Phase, Three Sectionalizing Oil Circuit Reclosers
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M3-23	One Sectionalizing Oil Circuit Recloser with By-Pass Switch
M3-23A	One Sectionalizing Oil Circuit Recloser with By-Pass Cutout
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M40-11	Armor Rods A.C.S.R. Conductor
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M41-10	Angle Assemble Guide, Vertical Construction 20° to 60° Angle, A.C.S.R. Conductors with Straight or Formed Type Armor Rods
M42-3	Deadend Assembly Guide - Deadend Clamp Meth. Copperweld Copper & Copper Conductors
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M42-21	Deadend Assembly Guide-Compression Method Copper Type Conductors
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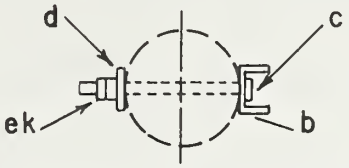
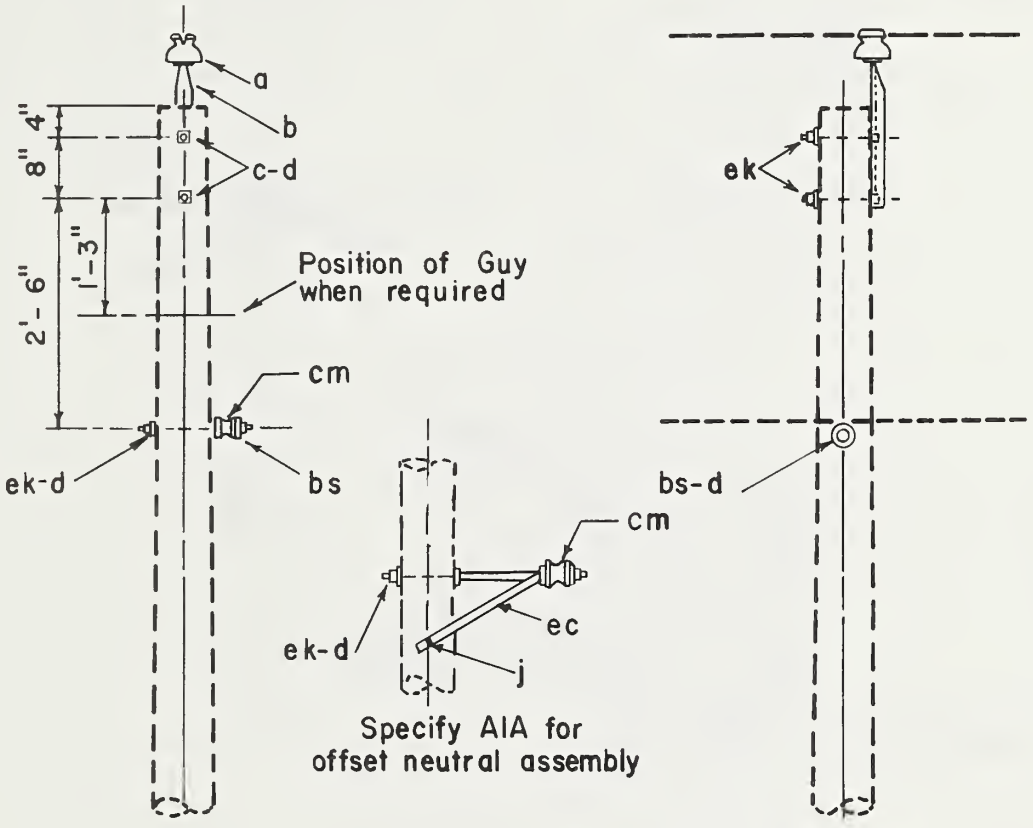
M43-10	Tap Assembly Guide A.C.S.R. Conductors
M52-3, M52-4	Neutral Identification and Pole Numbering Guide
R1	Clearing Right-of-Way Guide



POLE TOP PIN ASSEMBLY



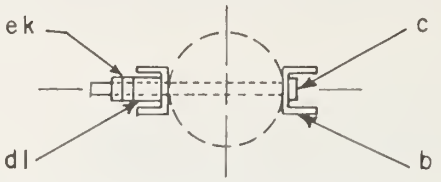
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
a	1	Insulator, pin type		d	3	Washer, square, 2 1/4"	
b	1	Pin, pole top, 20"		bs	1	Bolt, single upset, (AI only)	
c	2	Bolt, machine, 5/8"x req'd. length		ec	1	Bracket, offset, neutral, (AIA only)	
j	2	Screw, lag, 1/2"x 4" (AIA only)					
ek		Locknuts, as required					
cm	1	Spool insulator					

DESIGN LIMITS
Max. transverse load: 500 lbs. per conductor
Max. line angle within load limits: 5°

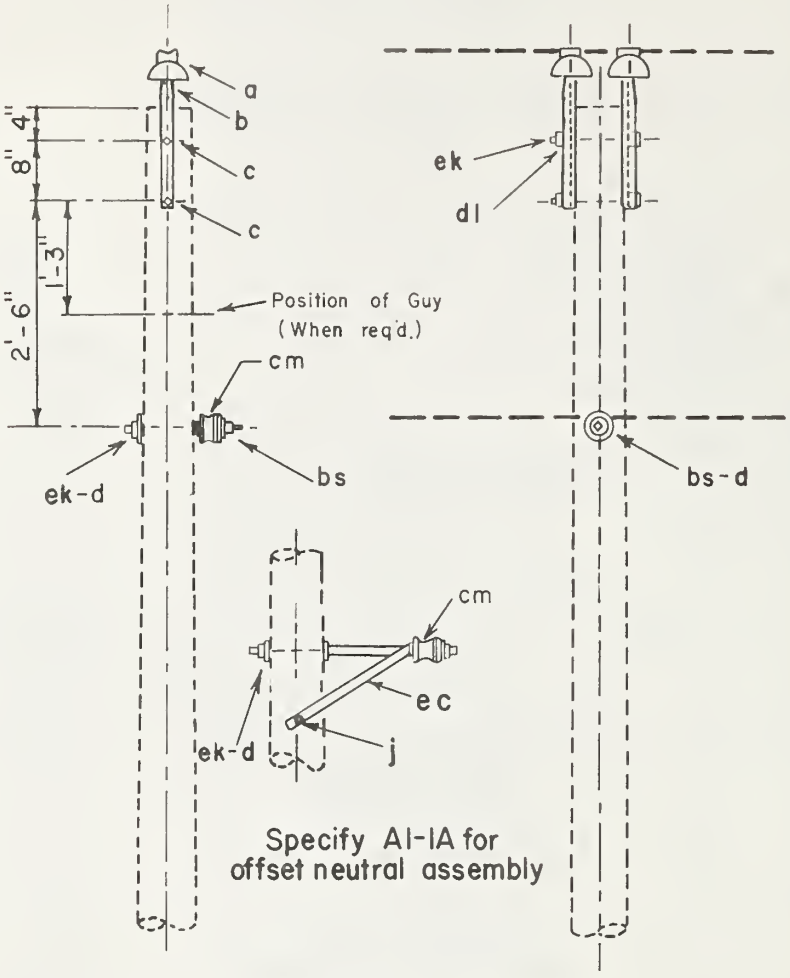
12.5/7.2 kV PRIMARY, 1-PHASE,
SINGLE PRIMARY SUPPORT

Apr., 1983

AI, AIA



POLE TOP PIN ASSEMBLY



Specify AI-IA for offset neutral assembly

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
a	2	Insulator, pin type		bs	1	Bolt, single upset, (AI-1 only)	
b	2	Pin, pole top, 20"		dl	2	Pipe spacer, 3/4" dia. x 1 1/2"	
c	2	Bolt, machine, 5/8" x req'd. length		j	2	Screw, lag, 1/2" x 4", (AI-IA only)	
d	1	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		ec	1	Bracket, offset, neutral, (AI-IA only)	
ek		Locknuts, as required					
cm	1	Spool insulator					

DESIGN LIMITS

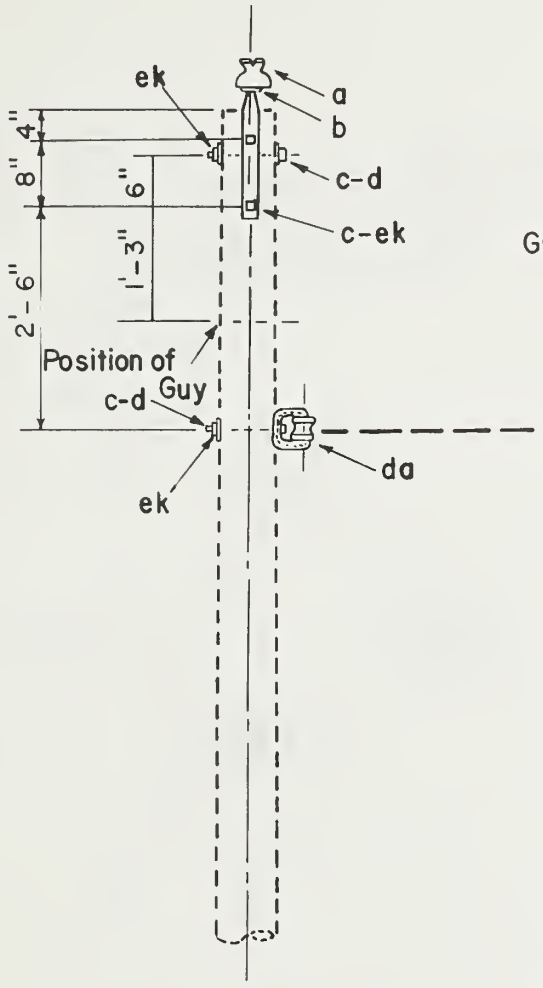
Max. transverse load: 500 lbs. per conductor

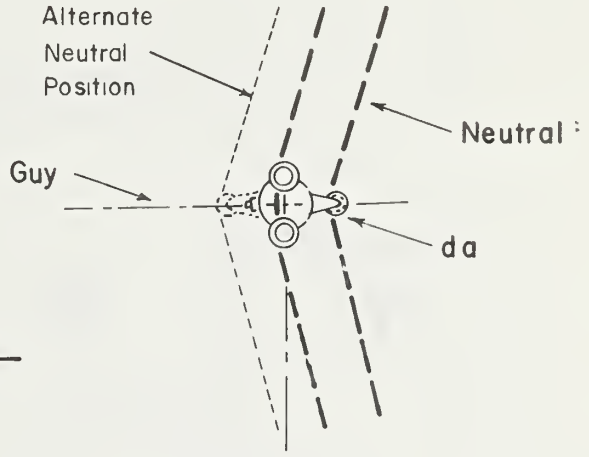
Max. line angle within load limits: 5°

12.5/7.2 kV PRIMARY, 1-PHASE, DOUBLE PRIMARY SUPPORT

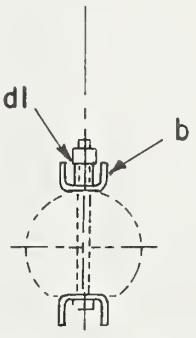
Apr., 1983

AI-1, AI-IA





PLAN



POLE TOP PIN ASSEMBLY

ITEM	NO. REQ'D	MATERIAL
a	2	Insulator, pin type
b	2	Pin, pole top, 20"
c	4	Bolt, machine, $\frac{5}{8}$" x req'd length
d	3	Washer, 2 ¼" x 2 ¼" x $\frac{3}{16}$", $\frac{13}{16}$" hole

ITEM	NO. REQ'D	MATERIAL
da	1	Bracket, insulated
dl	2	Pipe spacer, $\frac{3}{4}$" dia. x 1 ½"
ek		Locknuts, as required

DESIGN LIMITS

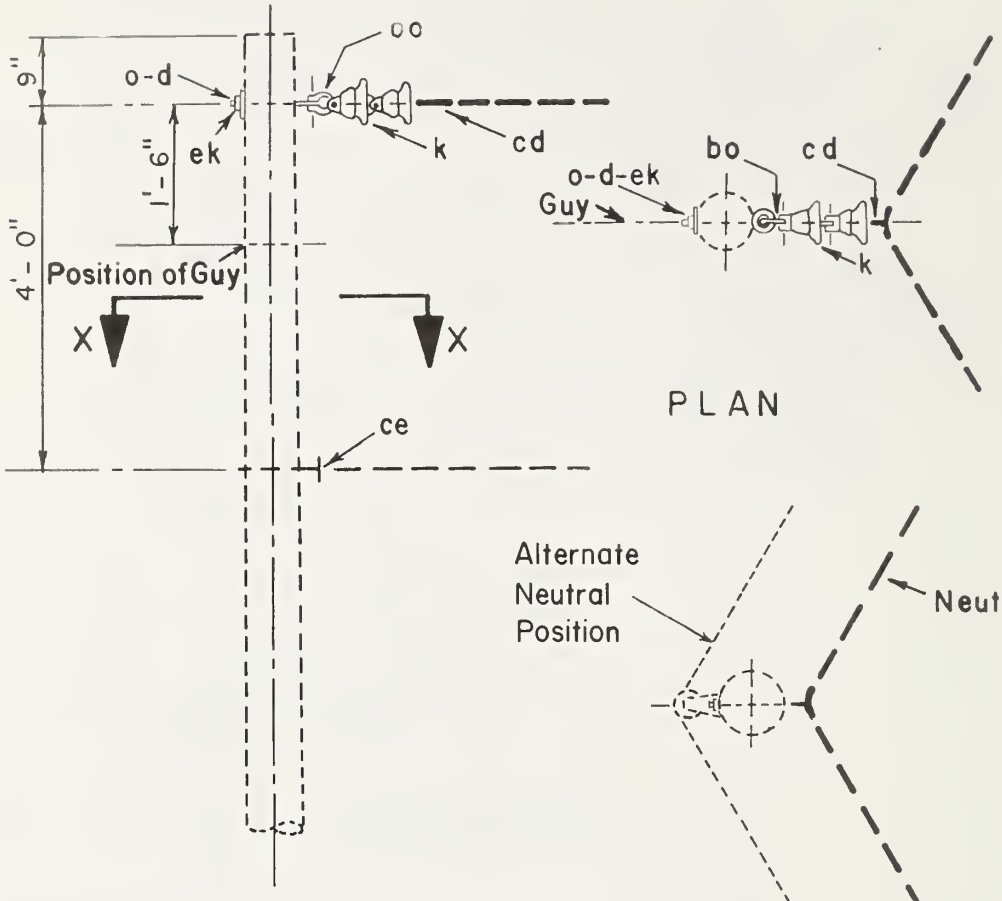
Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 20°

12.5 / 7.2 kV 1-PHASE DOUBLE PRIMARY SUPPORTS

Apr., 1983

A2



Note: Items cd and ce are shown on assembly drawings M41-1 and M41-10

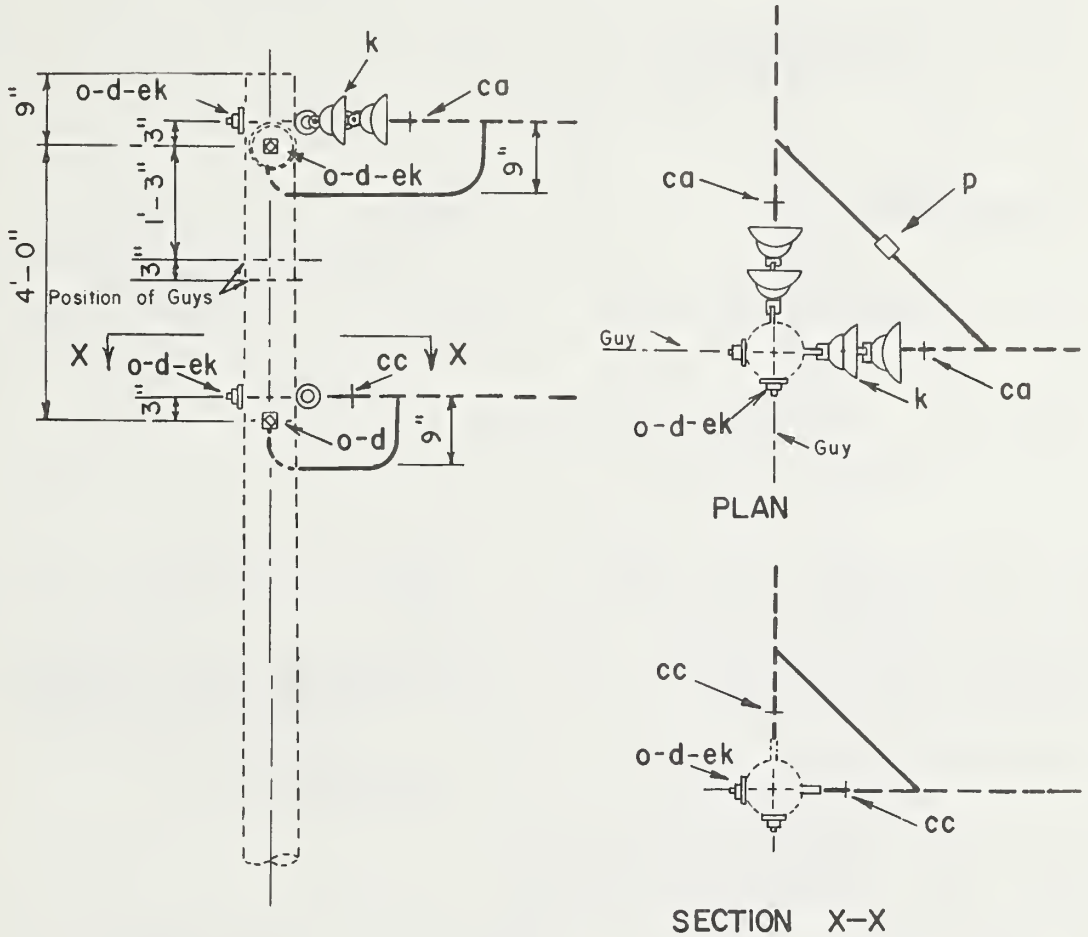
ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
				bo	1	Shackle, anchor	
d	1	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		cd	1	Angle assembly, primary	
k	2	Insulator, suspension		ce	1	Angle assembly, neutral	
o	1	Bolt, eye, 5/8" x req'd length		ek		Locknut, as required	

DESIGN LIMITS
Max transverse load 4000 lbs per conductor
Angle: 20°–60°

12.5/7.2 kV PRIMARY 1-PHASE

Apr., 1983

A3



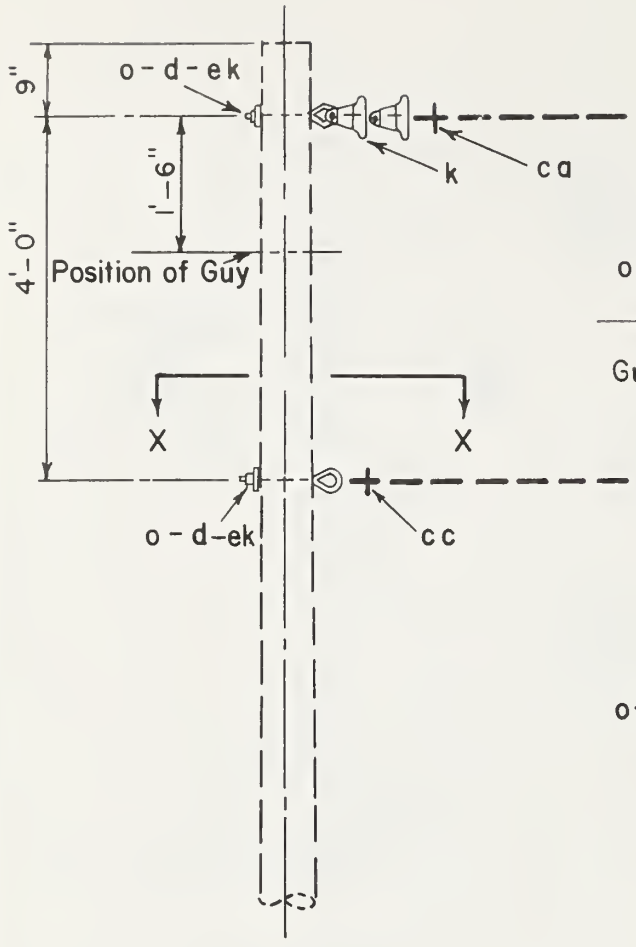
NOTE: Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21

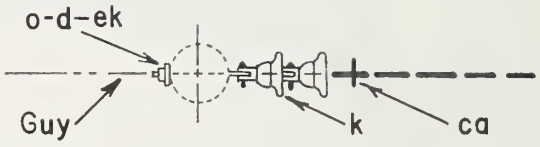
ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
d	4	Washer, 2 1/4"x2 1/4"x3/16", 13/16" hole	ca	2	Deadend assembly, primary
k	4	Insulator, suspension	cc	2	Deadend assembly, neutral
o	4	Bolt, eye, 5/8"x req'd. length	ek		Locknuts, as required
p		Connectors, as required			

12.5/7.2 kV PRIMARY, 1-PHASE 60° TO 90° ANGLE

Apr., 1983

A 4





PLAN

SECTION X-X

Note: Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21

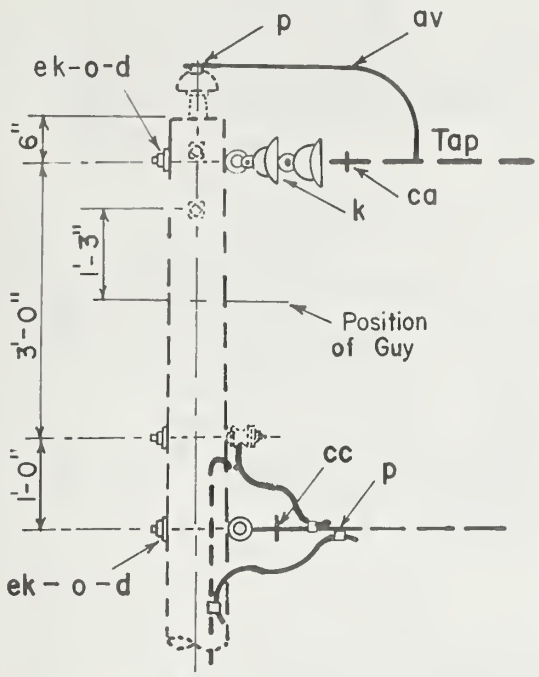
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
d	2	Washer, square, 2 1/4"		cc	1	Deadend assembly, neutral	
k	2	Insulator, suspension		ek		Locknuts, as required	
o	2	Bolt, eye, 5/8" x req'd. length					
ca	1	Deadend assembly, primary					

12.5/7.2 kV PRIMARY, 1-PHASE
DEADEND (SINGLE)

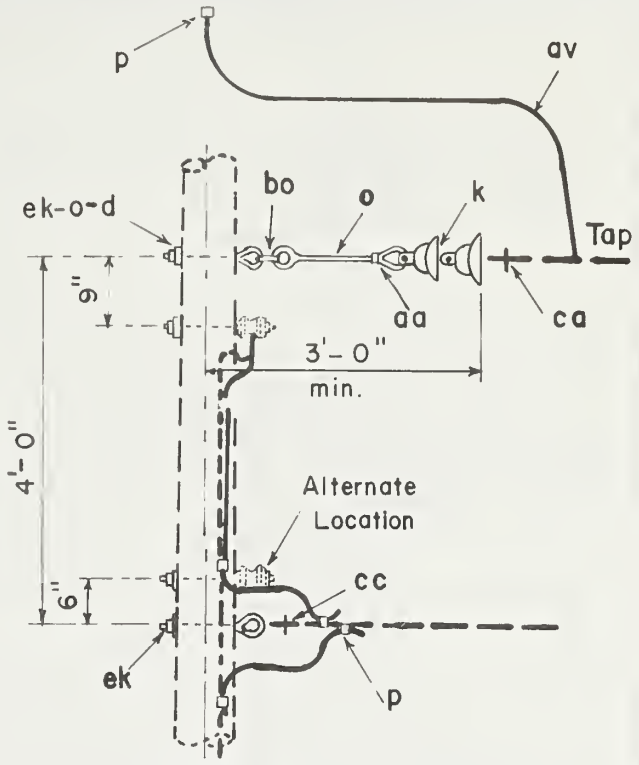
Apr., 1983

A5

Note: See guide drawings M29-1 and M29-2.



A5-1



A5-2

Notes: A5-1 assembly may be used with drawings such as: A1, A1-1, A2 .
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21.

Notes: A5-2 assembly may be used with drawings such as: B1, B1-1, B2, B7, C1, C1-2, C1-3, C1-4, C2-1, C2-2. (See tap assembly Guide M29-1 and M29-2)

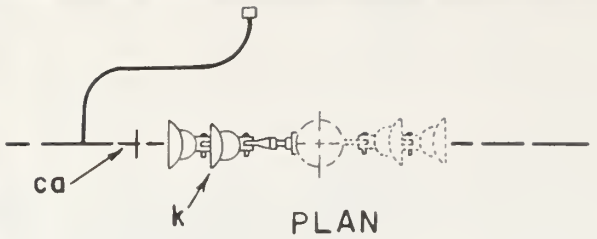
Specify A5-2A for tap to existing eyebolt.

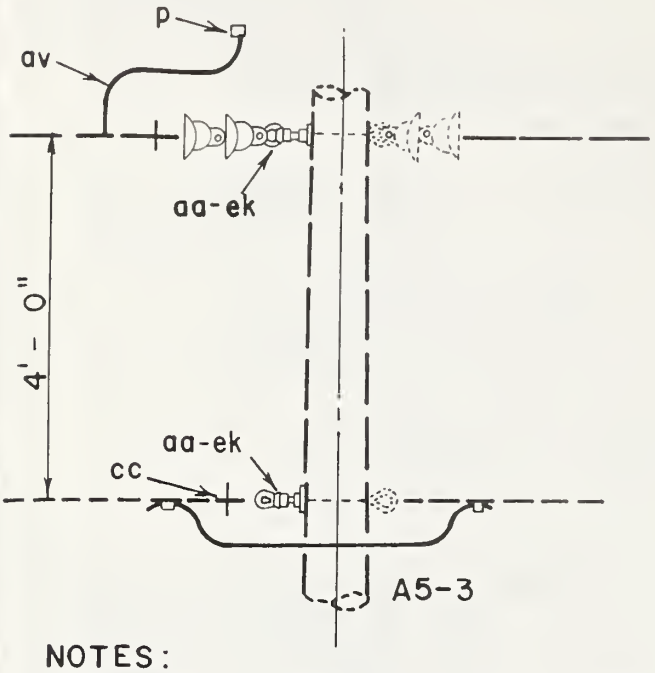
		ASSEMBLY UNIT		
		A5-1	A5-2	A5-2A
ITEM	MATERIAL	NO. REQ'D.	NO. REQ'D	NO. REQ'D.
d	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	2	2	
k	Insulator, suspension	2	2	2
o	Bolt, eye, 5/8" x req'd length	2	3	1
p	Connectors, as required			
aa	Nut, eye, 5/8"		1	3
av	Jumpers and leads, as required			
ca	Deadend assembly, primary	1	1	1
cc	Deadend assembly, neutral	1	1	1
bo	Shackle, anchor		1	1
ek	Locknuts, as required			

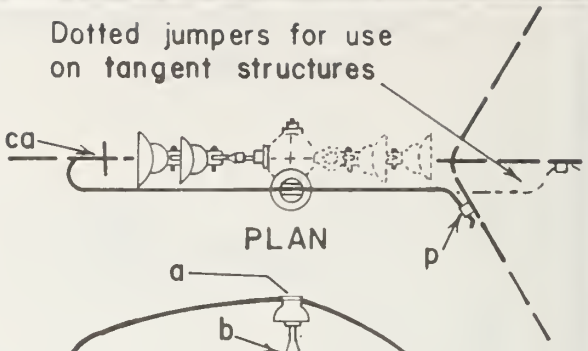
12.5/7.2 kV PRIMARY, SINGLE PHASE TAP

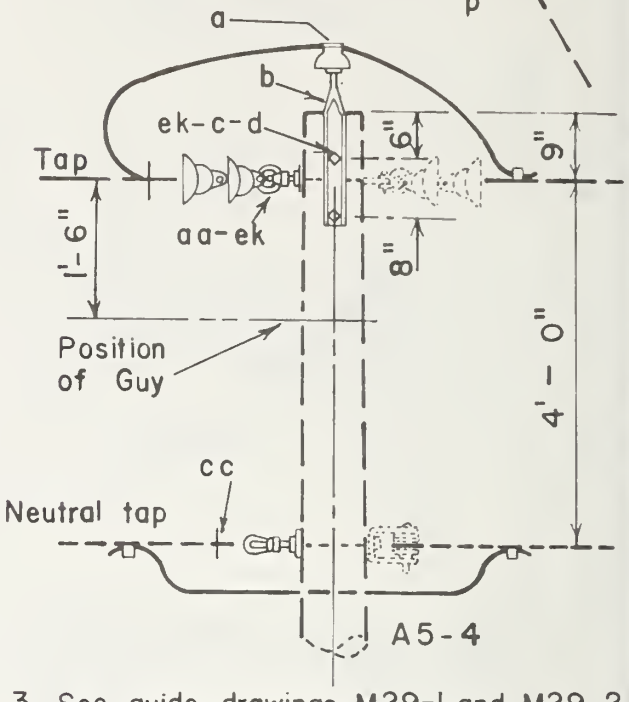
Apr., 1983

A5-1, A5-2, A5-2A









NOTES:

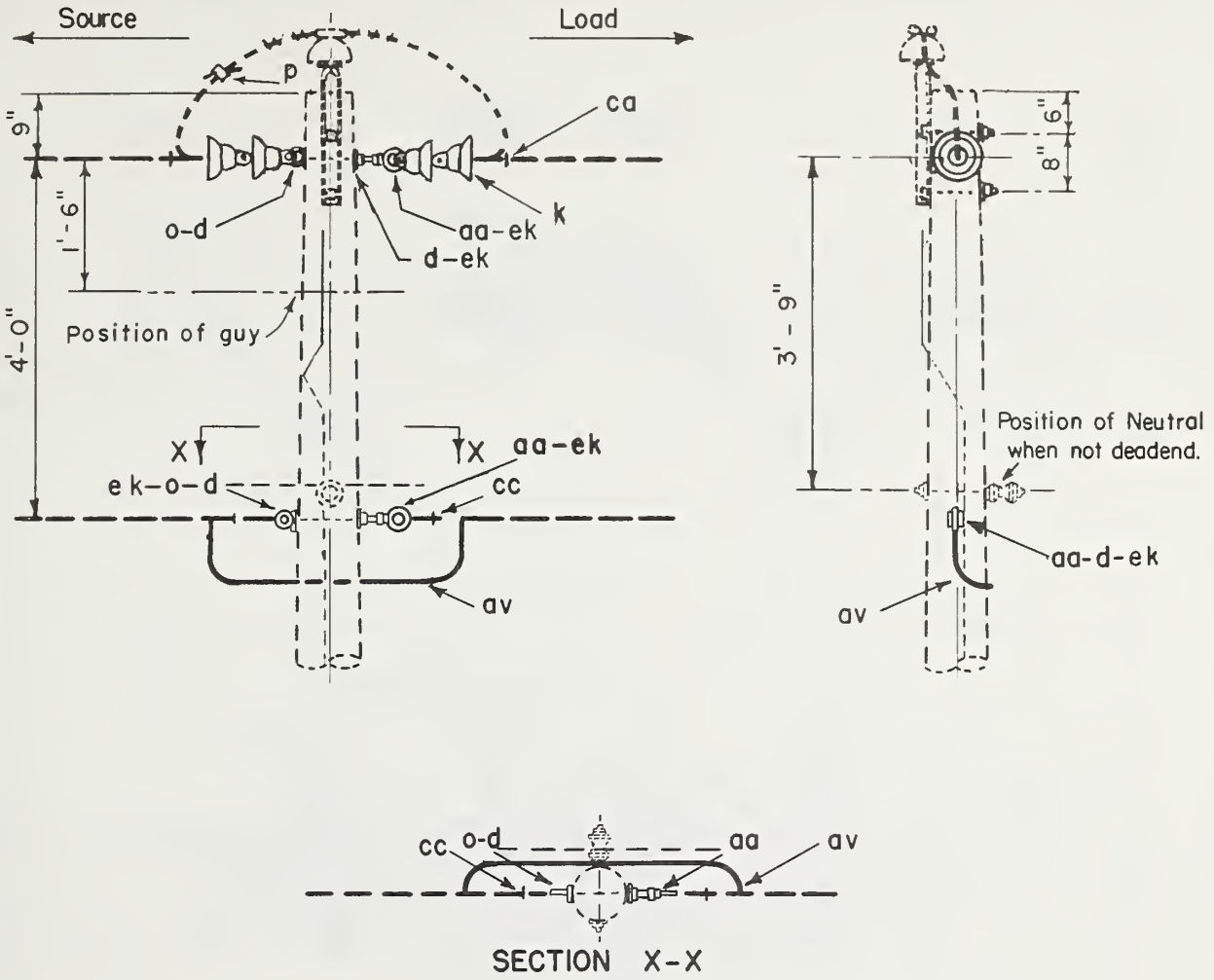
1. A5-3 assembly may be used with drawings such as: A4, B4-1 and C4-1.
2. A5-4 assembly may be used with A3, A5, B3, B5-1, C3, and C5-1 structures.
3. See guide drawings M29-1 and M29-2.
4. Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21

		ASSEMBLY UNIT	
ITEM	MATERIAL	A5-3 NO	A5-4 NO
a	Insulator, pin type		1
b	Pin, pole top, 20"		1
c	Bolt, machine, 5/8" x required length		2
d	Washer, square, 2 1/4"		2
k	Insulator, suspension	2	2
p	Connectors	as req'd.	as req'd.
aa	Nut, eye, 5/8"	2	2
av	Jumpers	as req'd.	as req'd.
ca	Deadend assembly, primary	1	1
cc	Deadend assembly, neutral	1	1
ek	Locknuts	as required	as required

12.5/7.2 kV PRIMARY, SINGLE PHASE TAP

Apr., 1983

A5-3, A5-4



NOTE:

A6 may be used with drawings such as M3-1A, M3-10, M3-41, M3-23, M5-1, M5-4, M5-2 (as shown).

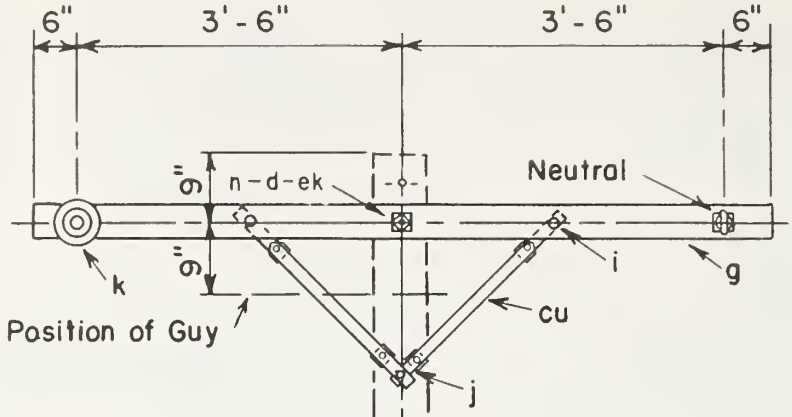
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

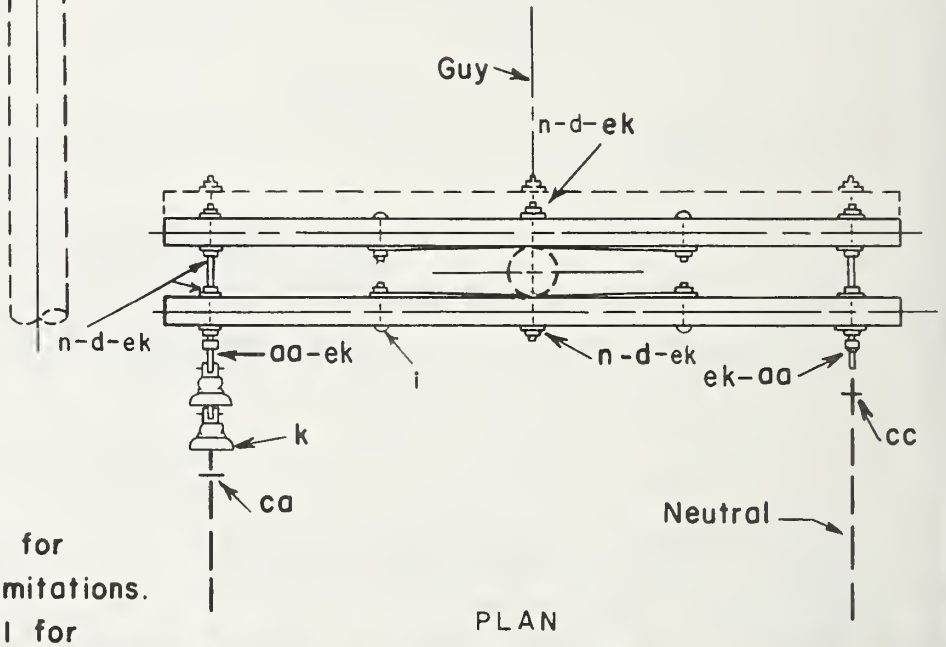
ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
			aa	2	Nut, eye, 5/8"
d	4	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	av		Jumpers, as required
k	4	Insulator, suspension	ca	2	Deadend assembly, primary
			cc	2	Deadend assembly, neutral
o	2	Bolt, eye, 5/8"x req'd. length			
p		Connectors, as req'd.	ek		Locknuts, as required

12.5/7.2 kV PRIMARY, 1-PHASE,
VERTICAL DEADEND (DOUBLE)

Apr., 1983

A6





PLAN

Notes:

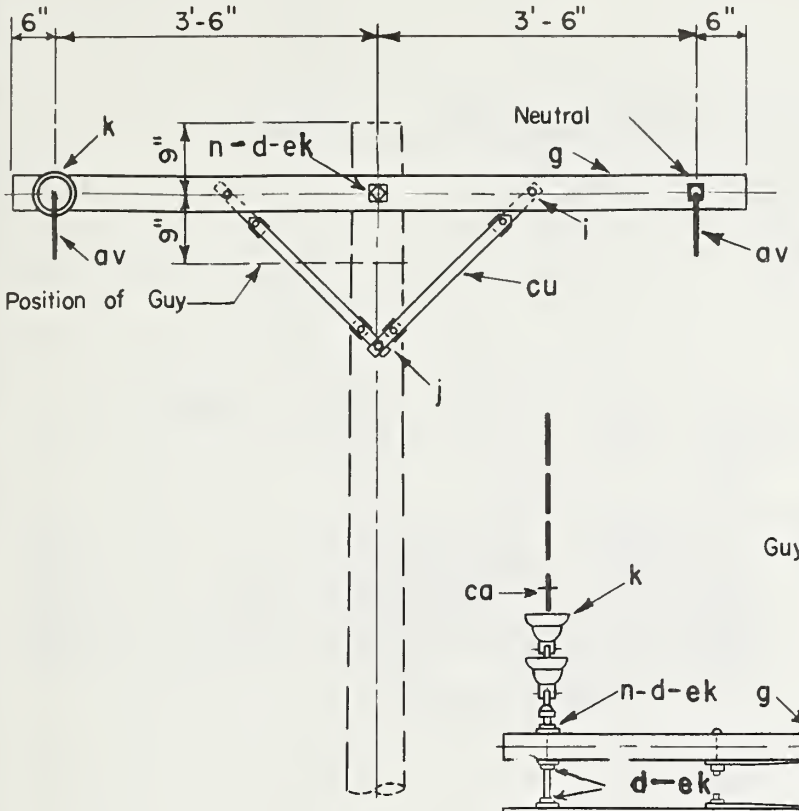
1. See drawing E5-1 for Crossarm loading limitations.
2. Designate as A7-1 for assembly with three crossarms.
3. Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21

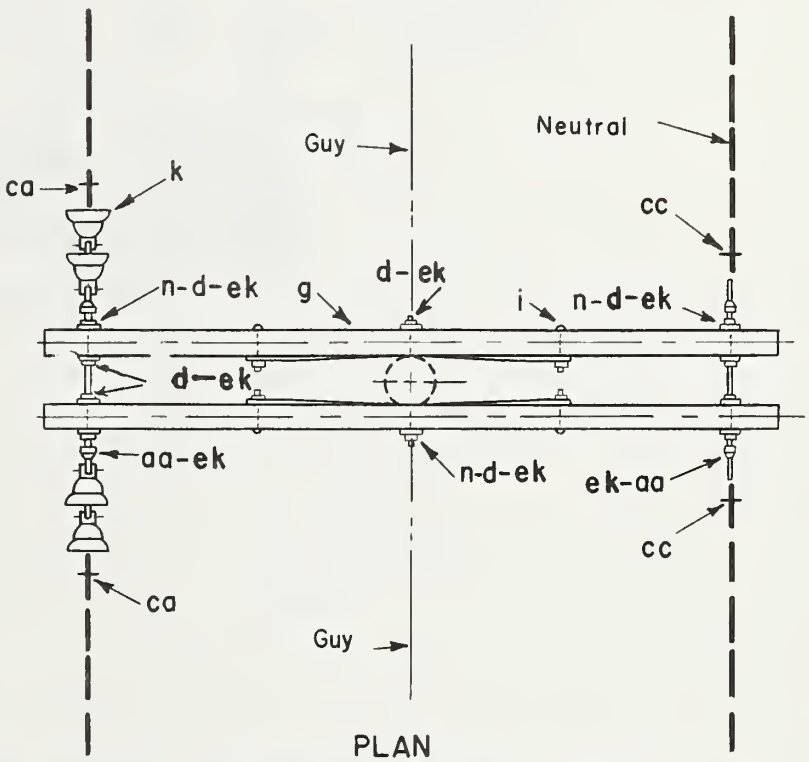
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
d	10	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		n	3	Bolt, double arming, 5/8" x req'd l'gth	
g	2	Crossarm, 3 5/8' x 4 5/8" x 8' - 0"		aa	2	Nut, eye, 5/8"	
cu	4	Brace, wood, 28"		ca	1	Deadend assembly, primary	
i	4	Bolt, carriage, 3/8" x 4½"		cc	1	Deadend assembly, neutral	
j	2	Screw, lag, ½" x 4"		ek		Locknuts, as required	
k	2	Insulator, suspension					

12.5/7.2 kV, 1-PHASE, CROSSARM CONSTRUCTION
DEADEND (SINGLE)

Apr., 1983

A7, A7-1





PLAN

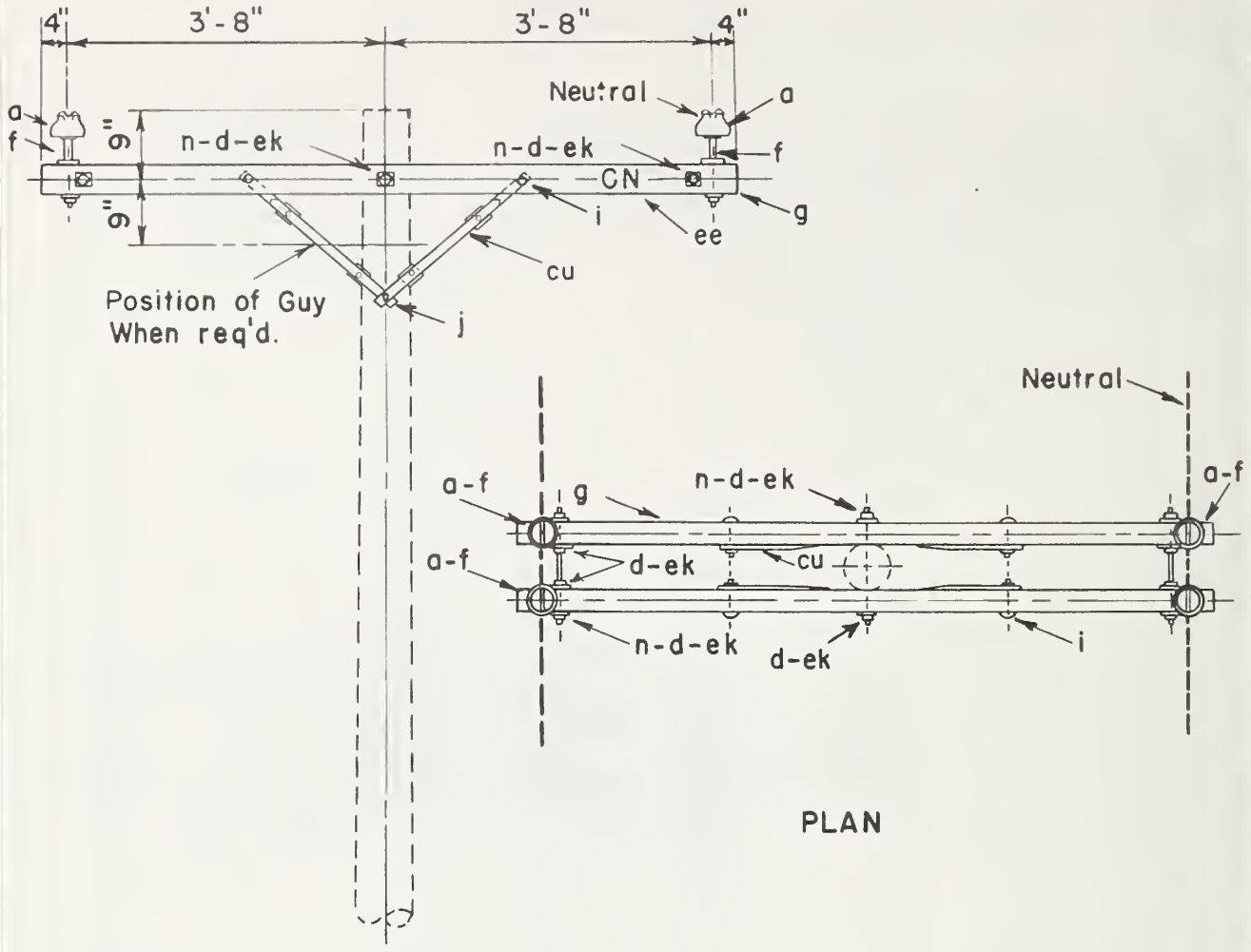
Note:
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
d	10	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	p		Connectors, as req'd.
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	aa	4	Nut, eye, 5/8"
cu	4	Brace, wood, 28"	av		Jumpers
i	4	Bolt, carriage, 3/8"x 4 1/2"	ca	2	Deadend assembly, primary
j	2	Screw, lag, 1/2" x 4"	cc	2	Deadend assembly, neutral
k	4	Insulator, suspension	ek		Locknuts, as required
n	3	Bolt, double arming, 5/8"x req'd. length			

12.5/7.2 kV, 1-PHASE
CROSSARM CONSTRUCTION – DEADEND (DOUBLE)

Apr., 1983

A8



PLAN

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
				i	4	Bolt, carriage, 3/8" x 4 1/2"	
a	4	Insulator, pin type		i	2	Screw, lag, 1/2" x 4"	
d	10	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		n	3	Bolt, double arming, 5/8" x req'd l'gth	
f	4	Pin, crossarm, steel, 5/8" x 10 3/4"		ek		Locknuts, as required	
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"		ee	4	Letters 2 "C", 2 "N", with 1" nails	
cu	4	Brace, wood, 28"					

DESIGN LIMITS

Max. transverse load: 1000 lbs. per conductor

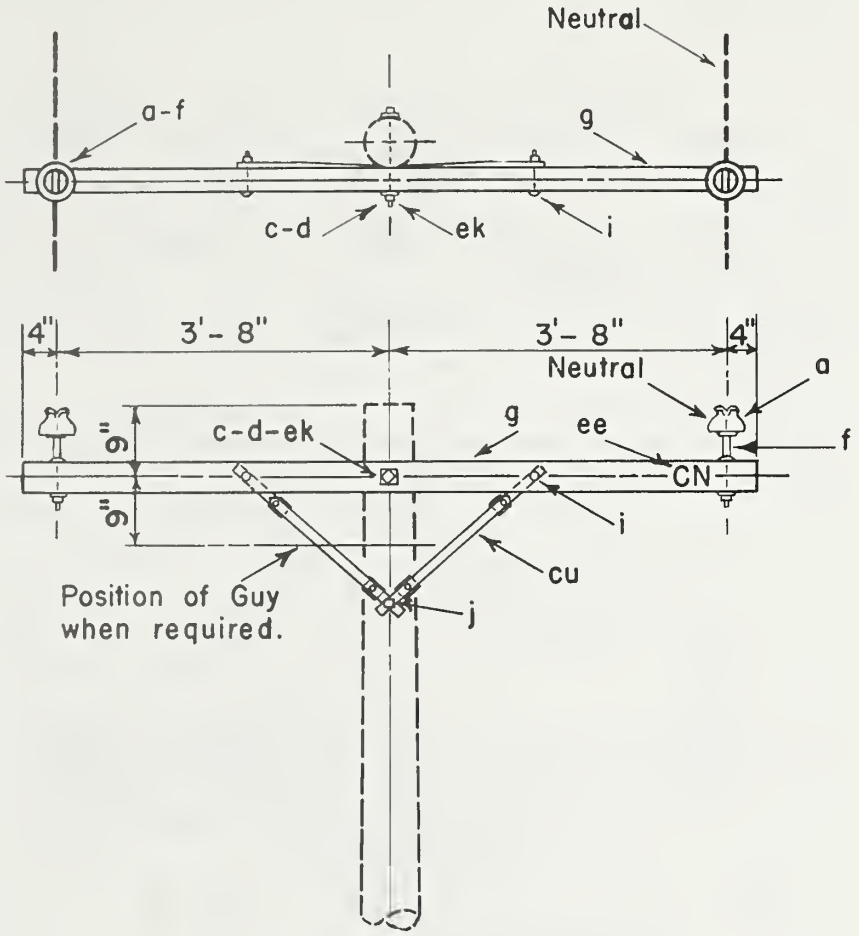
Max. line angle within load limits: 20°

12.5/7.2 kV

1-PHASE CROSSARM CONST. - DOUBLE LINE ARM

Apr., 1983

A9



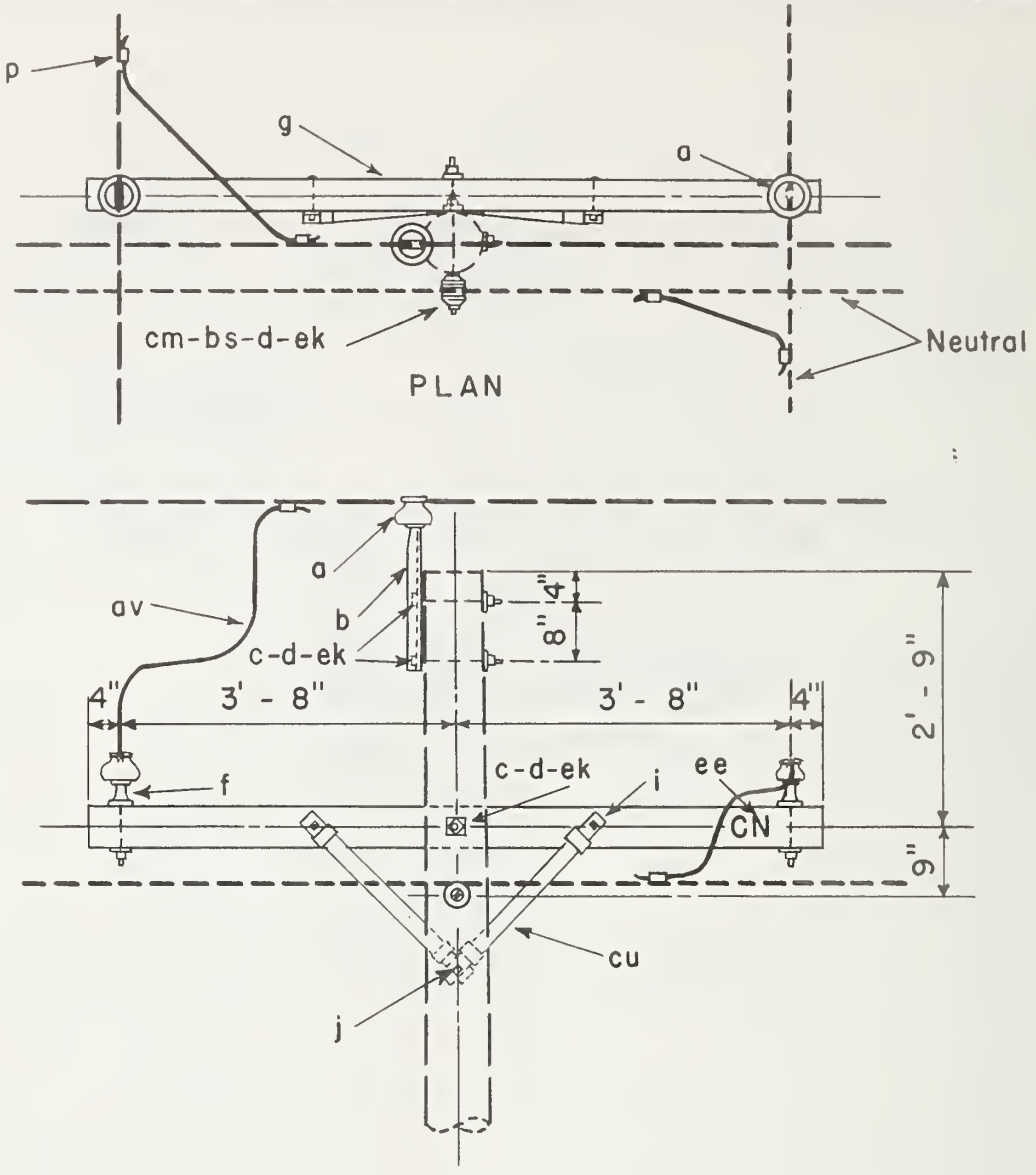
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
				cu	2	Brace, wood, 28"	
a	2	Insulator, pin type		i	2	Bolt, carriage, 3/8"x 4 1/2"	
c	1	Bolt, machine, 5/8"x req'd. length		j	1	Screw, lag, 1/2"x 4"	
d	2	Washer, square, 2 1/4"		ee	4	Letters, 2 "C", "N", with 1" nails	
f	2	Pin, crossarm, steel, 5/8"x 10 3/4"		ek		Locknuts, as required	
g	1	Crossarm, 3 5/8"x 4 5/8"x 8'-0"					

DESIGN LIMITS
Max. transverse load: 500 lbs. per conductor
Max. line angle within load limits: 5°

12.5/7.2 kV - 1 PHASE
CROSSARM CONSTRUCTION - SINGLE LINE ARM

Apr., 1983

A9-1



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	3	Insulator, pin type	av		Jumpers, as required
b	1	Pin, pole top, 20"	bs	1	Bolt, single upset,
c	3	Bolt, machine, 5/8" x req'd. length	ee	4	Letters, 2 "C", 2 "N", with 1" nails
d	5	Washer, square, 2 1/4"	ek		Locknuts, as required
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"	cu	2	Brace, wood, 28"
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	cm	1	Spool insulator
i	2	Bolt, carriage, 3/8" x 4 1/2"	p		Connectors, as required
j	1	Screw, lag, 1/2" x 4"			

DESIGN LIMITS

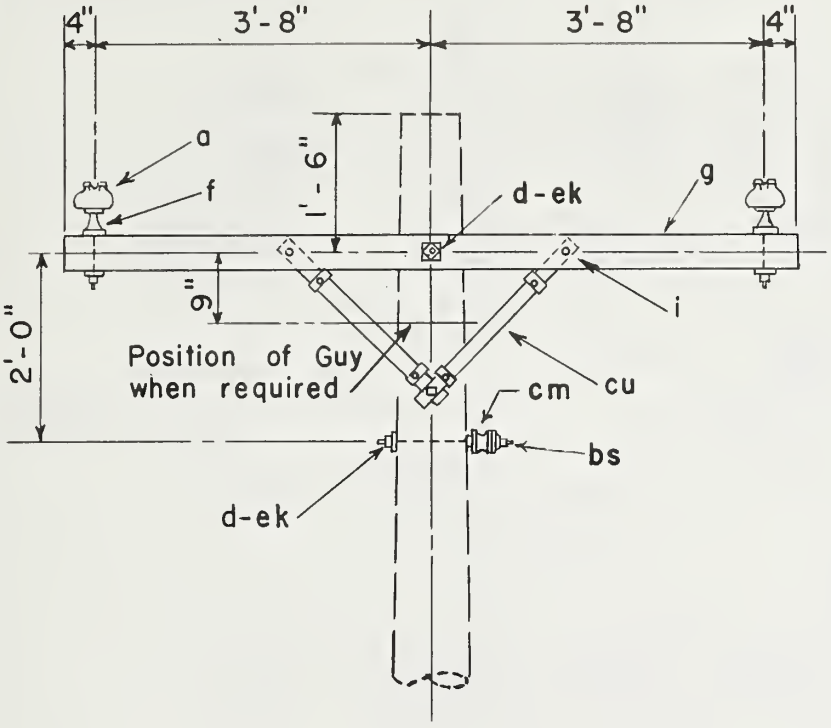
Max. transverse load: 500 lbs. per conductor

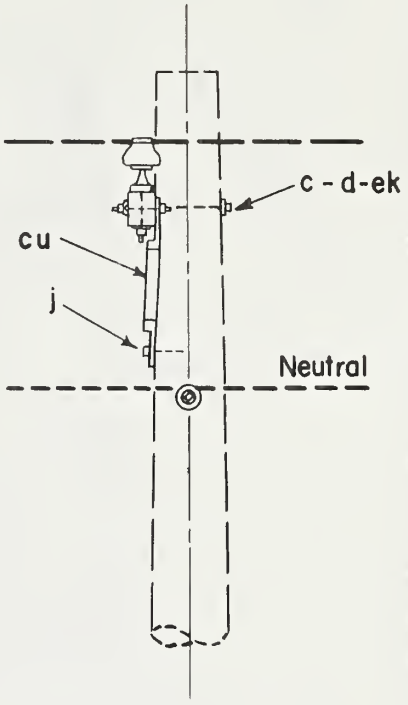
Max. line angle within load limits: 5°

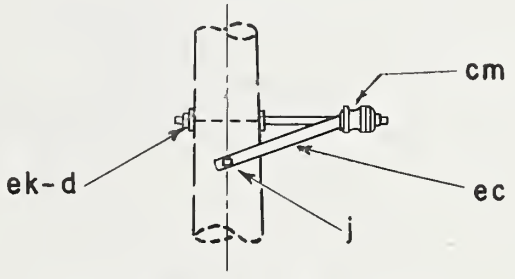
12.5/7.2 kV
1-PHASE CROSSARM CONSTRUCTION
SINGLE PHASE JUNCTION

Apr., 1983

A22







Specify BIA for
offset neutral assembly

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	2	Insulator, pin type	bs	1	Bolt, single upset, (BI only)
c	1	Bolt, machine, 5/8" x required length	cu	2	Brace, wood, 28"
d	3	Washer, square, 2 1/4"	ec	1	Bracket, offset neutral (BIA only)
f	2	Pin, crossarm, steel, 5/8"x 10 3/4"	ek		Locknuts, as required
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	cm	1	Spool insulator
i	2	Bolt, carriage, 3/8" x 4 1/2"			
j	1	Screw, lag, 1/2" x 4" (BI only)			
j	3	Screw, lag, 1/2" x 4" (BIA only)			

DESIGN LIMITS

Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits: 5°

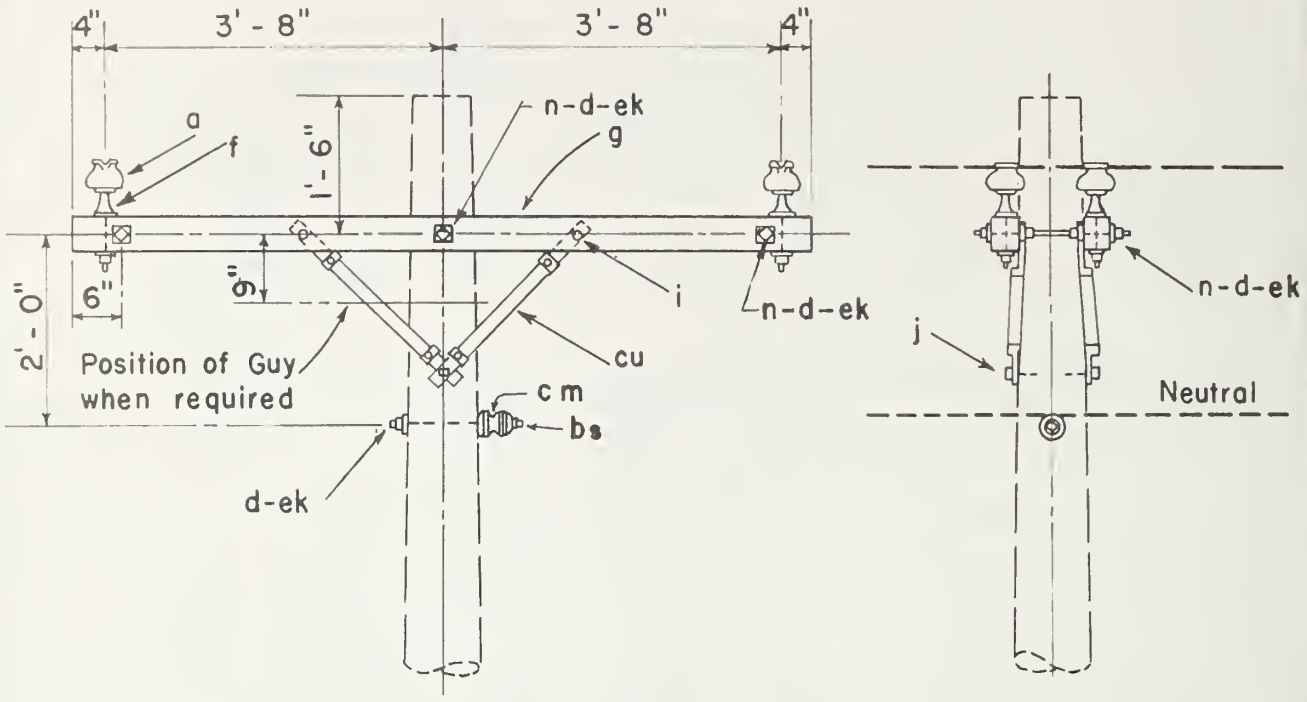
12.5/7.2 kV

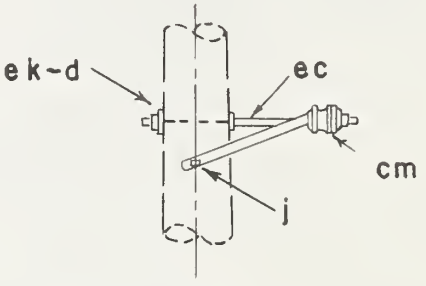
TWO PHASE CROSSARM CONSTRUCTION

SINGLE PRIMARY SUPPORT

Apr., 1983

BI, BIA





Specify BI-IA for
offset neutral assembly

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	4	Insulotor, pin type	bs	1	Bolt, single upset (BI-1 only)
d	11	Washer, square, 2 1/4"	cu	4	Broce, wood, 28"
f	4	Pin, crossorm, steel, 5/8" x 10 3/4"	ec	1	Bracket, offset neutral (BI-IA only)
g	2	Crossorm, 3 5/8" x 4 5/8" x 8' - 0"	ek		Locknuts, as required
i	4	Bolt, corrioge, 3/8" x 4 1/2"	cm	1	Spool insulator
j	2	Screw, lag, 1/2" x 4" (BI-1 only)			
j	4	Screw, log, 1/2" x 4" (BI-IA only)			
n	3	Bolt, double arming, 5/8" x req'd. length			

DESIGN LIMITS

Max. transverse load: 1000 lbs. per conductor

Max line ongle within load limits: 5°

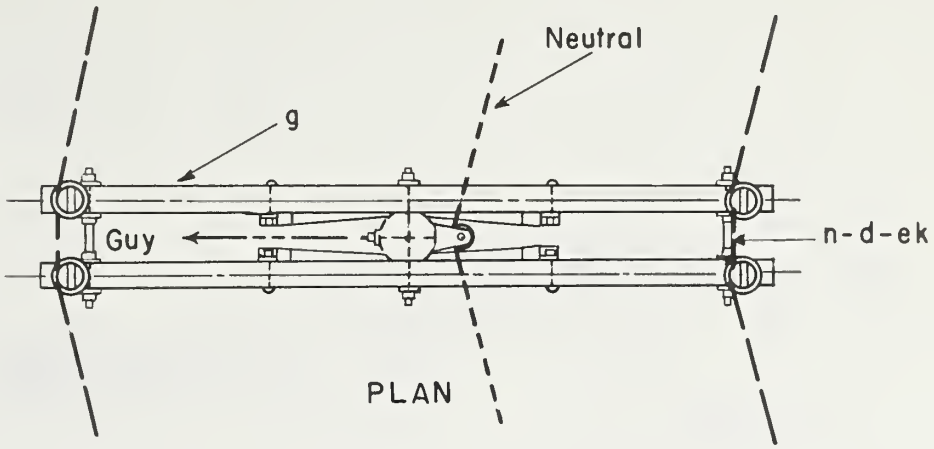
12.5/7.2 kV

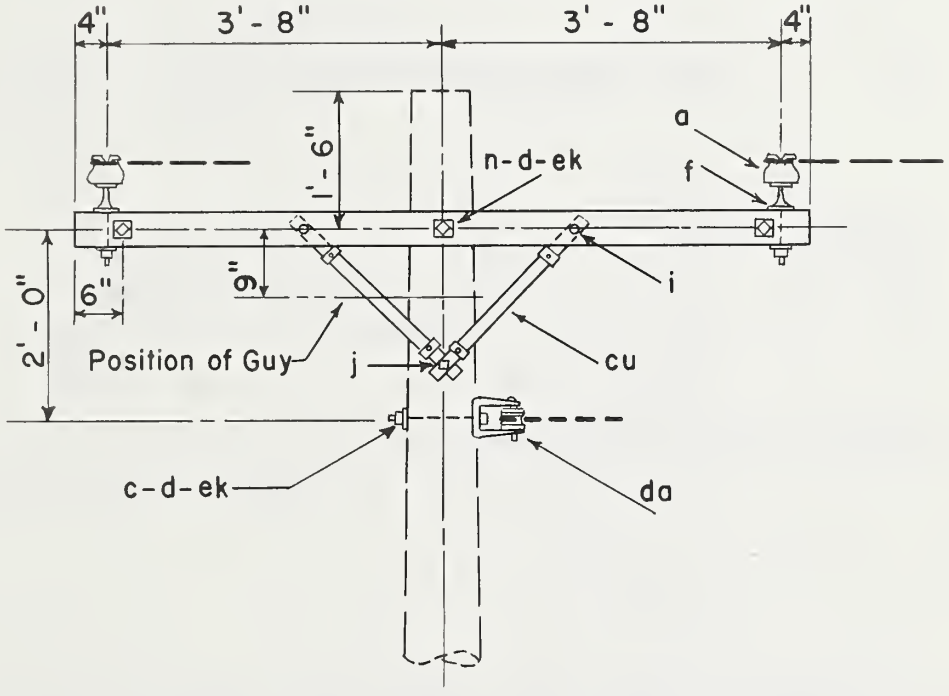
TWO PHASE, CROSSARM CONSTRUCTION

DOUBLE PRIMARY SUPPORT

Apr., 1983

BI-1, BI-IA





ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	4	Insulator, pin type	j	2	Screw, lag, 1/2" x 4"
c	1	Bolt, machine, 5/8" x required length	n	3	Bolt, double arming, 5/8" x req'd length
d	11	Washer, square, 2 1/4"	cu	4	Brace, wood, 28"
f	4	Pin, crossarm, steel, 5/8" x 10 3/4"	da	1	Bracket, insulated
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ek		Lacknuts, as required
i	4	Bolt, carriage, 3/8" x 4 1/2"			

DESIGN LIMITS

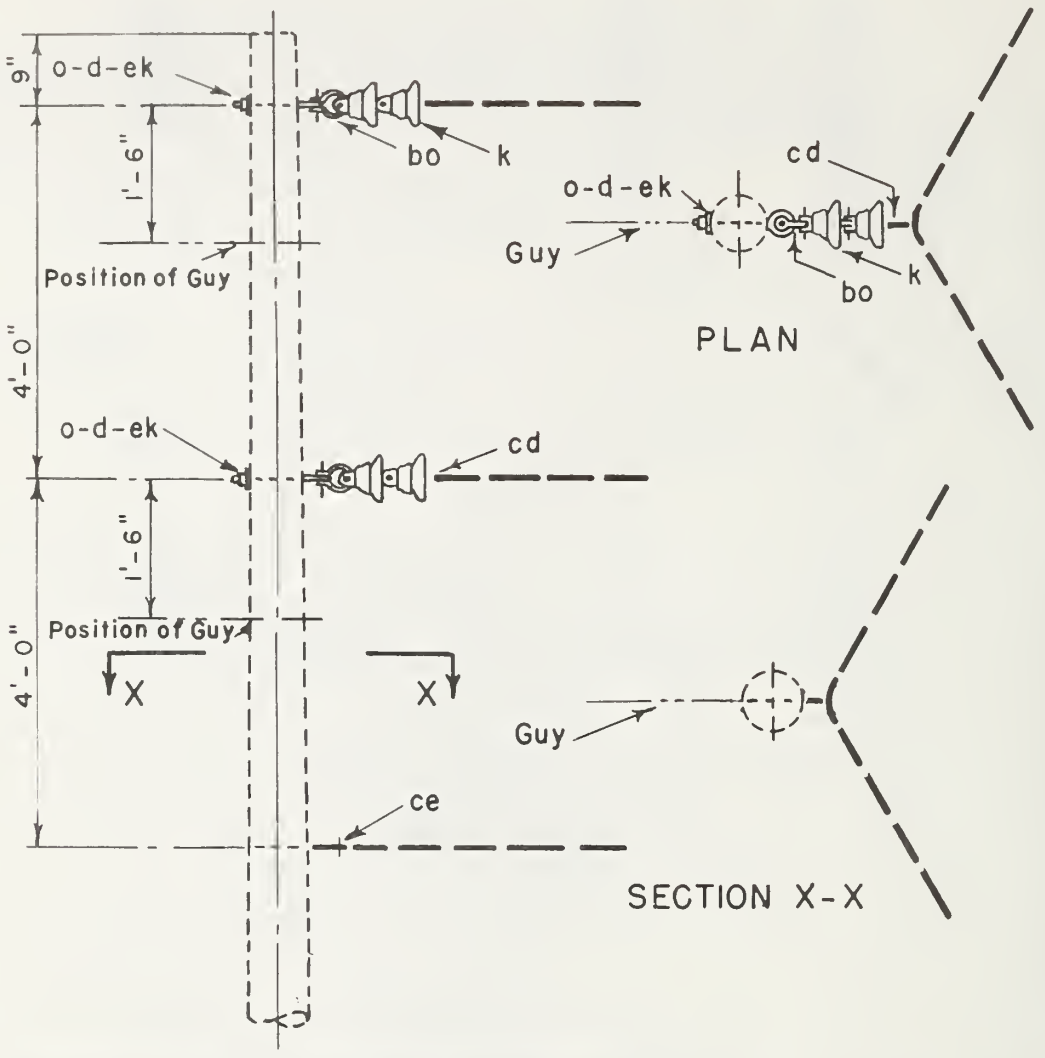
Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 20°

12.5/7.2 kV, TWO PHASE CROSSARM CONSTRUCTION, DOUBLE PRIMARY SUPPORTS

Apr., 1983

B2



Note:

If future conversion is likely, allow space at top of pole for middle phase. Designate as B3A for this construction.

Items cd and ce are shown on assembly drawings M41-1 and M41-10 .

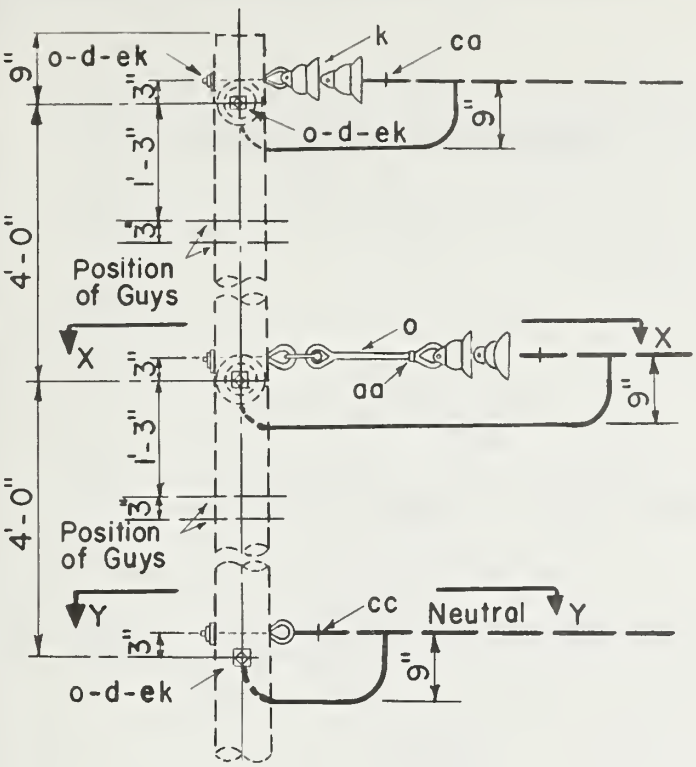
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
				bo	2	Shackle, anchor	
d	2	Washer, 2 1/4"sq. x 3/16", 13/16" hole		cd	2	Angle assembly, primary	
k	4	Insulator, suspension		ce	1	Angle assembly, neutral	
o	2	Bolt, eye, 5/8" x req'd. length		ek		Locknuts, as required	

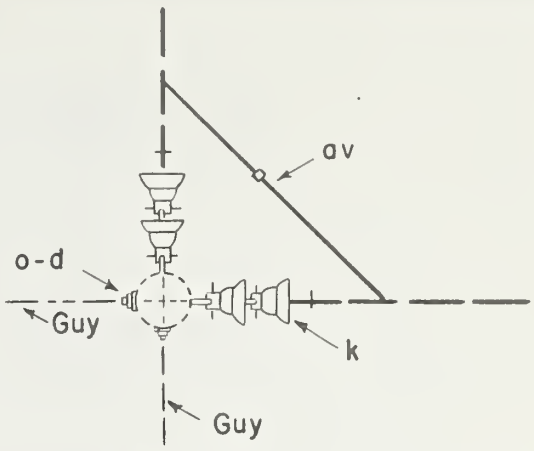
DESIGN LIMITS
Max. transverse load: 4000 lbs. per conductor
Angle: 20° - 60°

12.5/7.2 kV - TWO PHASE
VERTICAL CONSTRUCTION

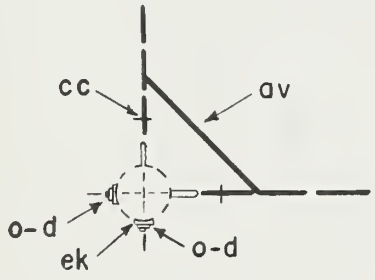
Apr., 1983

B3, B3A

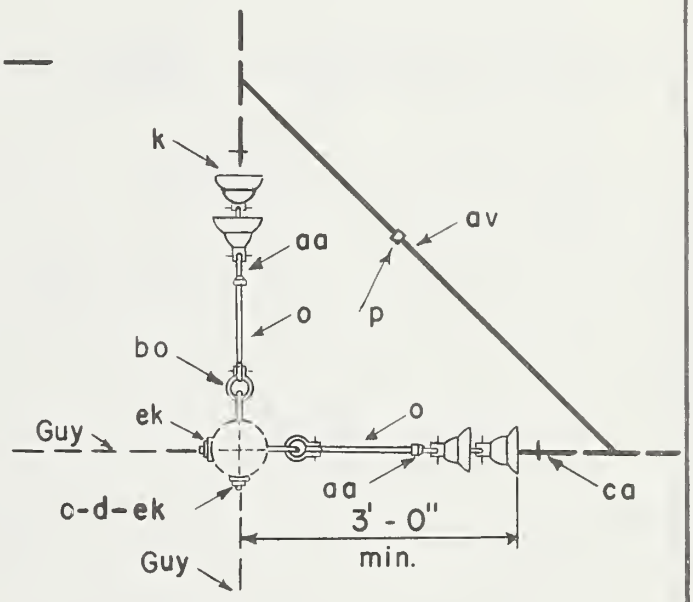




PLAN



SECTION Y-Y



SECTION X-X

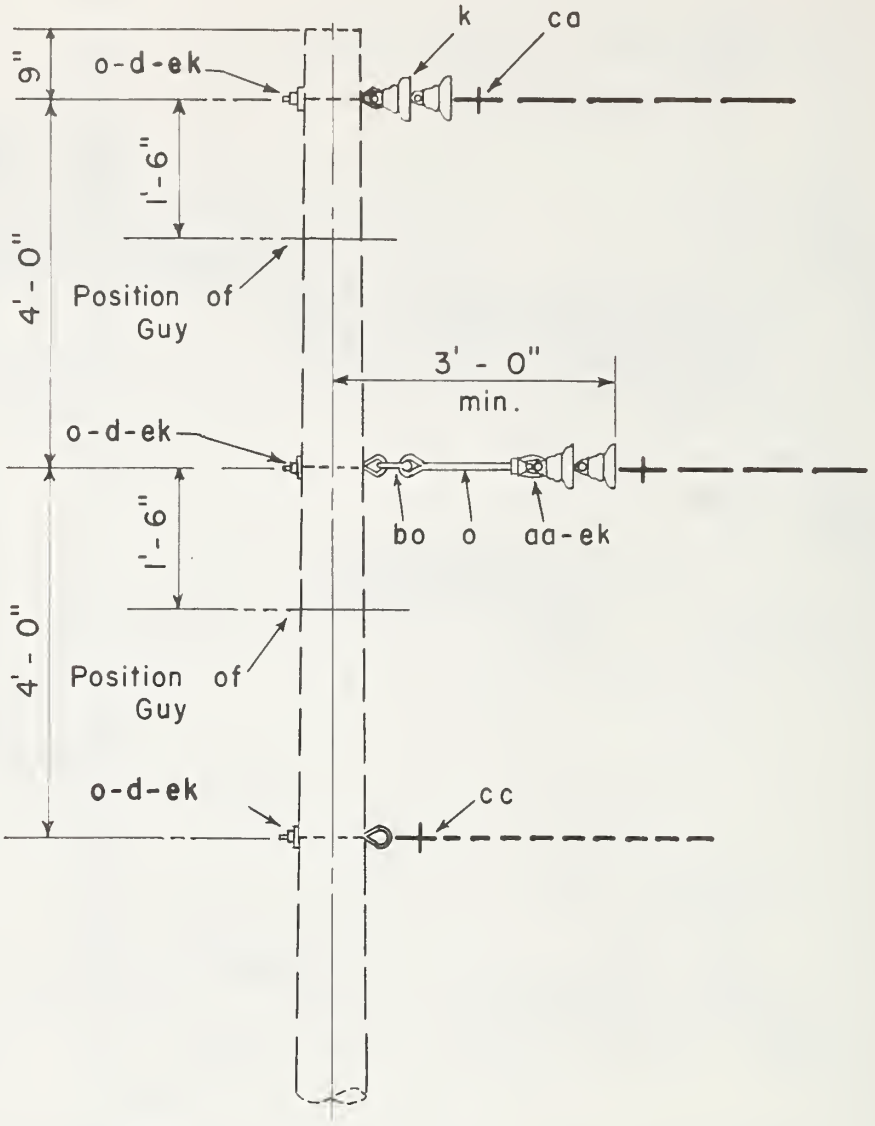
Note:
If future conversion is likely, allow space at top of pole for middle phase. Designate as B4-1A for this construction.
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, M42-21

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
d	6	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		bo	2	Shackle, anchor	
k	8	Insulator, suspension		co	4	Deadend assembly, primary	
o	8	Bolt, eye, 5/8" x req'd length		cc	2	Deadend assembly, neutral	
p		Connectors, as required		ek		Locknuts, as required	
aa	2	Nut, eye, 5/8"					
av		Jumpers					

12.5/7.2 kV TWO PHASE, VERTICAL CONSTRUCTION

Apr., 1983

B4-1, B4-1A



B5 - 1

Note:
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21.

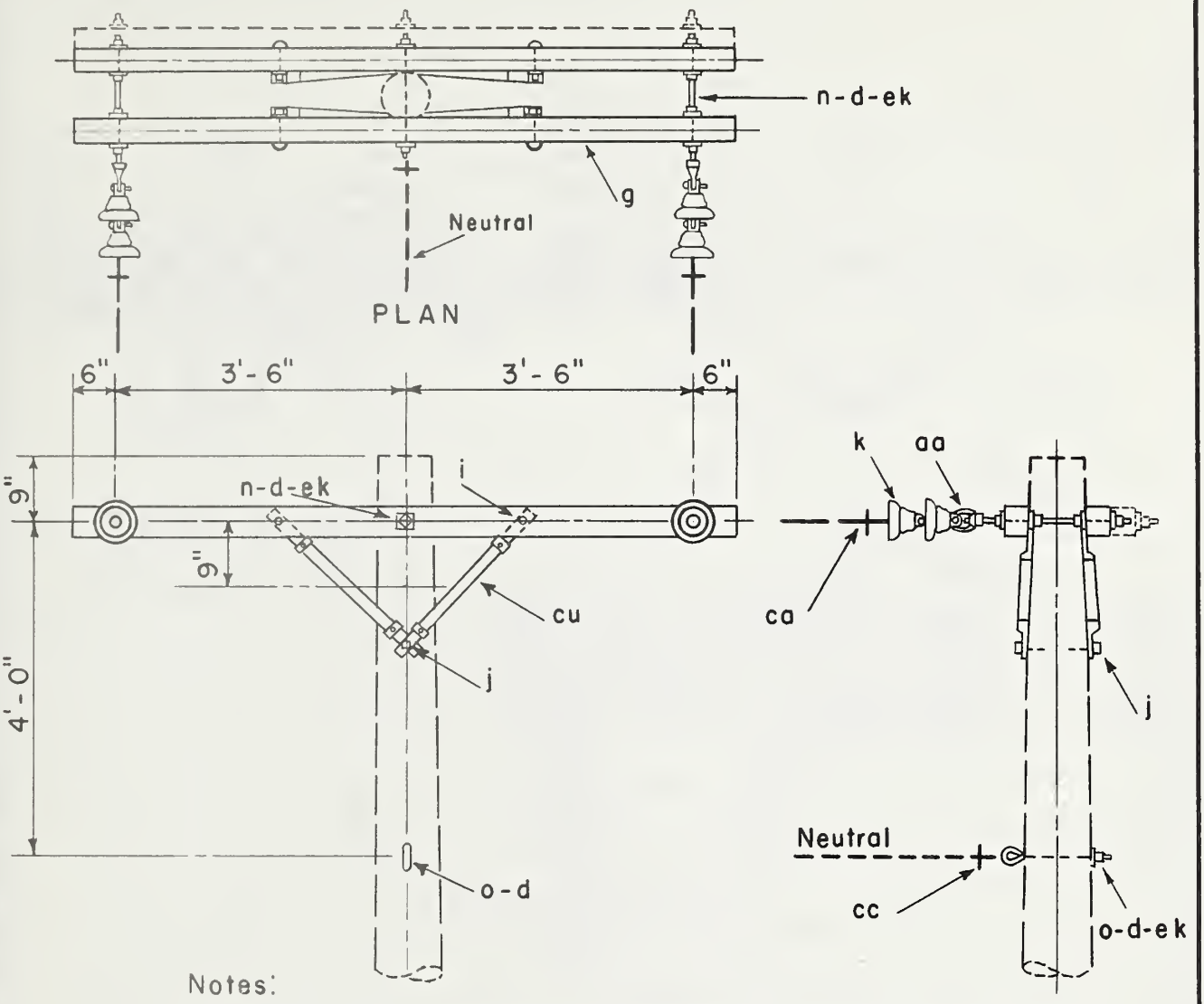
If future conversion is likely, allow space at top of pole for middle phase. Designate as B5-1A for this construction.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
d	3	Washer, square, 2 1/4"	bo	1	Shackle, anchor
k	4	Insulator, suspension	ca	2	Deadend assembly, primary
o	4	Bolt, eye, 5/8" x required length	cc	1	Deadend assembly, neutral
aa	1	Nut, eye, 5/8"	ek		Locknuts, as required

12.5/7.2 kV TWO PHASE
VERTICAL CONSTRUCTION, DEADEND (SINGLE)

Apr., 1983

B5-1, B5-1A



Notes:

1. Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-11.
2. Designate as B7-1 for assembly with three crossarms.
3. See drawing E5-1 for crossarm loading limitations.

ITEM	NO.	MATERIAL	ITEM	NO.	
d	11	Washer, square, 2 1/4"	o	1	Bolt, eye, 5/8" x required length
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	aa	2	Nut, eye, 5/8"
i	4	Bolt, carriage, 3/8" x 4 1/2"	ca	2	Deadend assembly, primary
j	2	Screw, lag, 1/2" x 4"	cc	1	Deadend assembly, neutral
k	4	Insulator, suspension	cu	4	Brace, wood 28"
n	3	Bolt, double arming, 5/8" x req'd. length	ek		Locknuts, as required

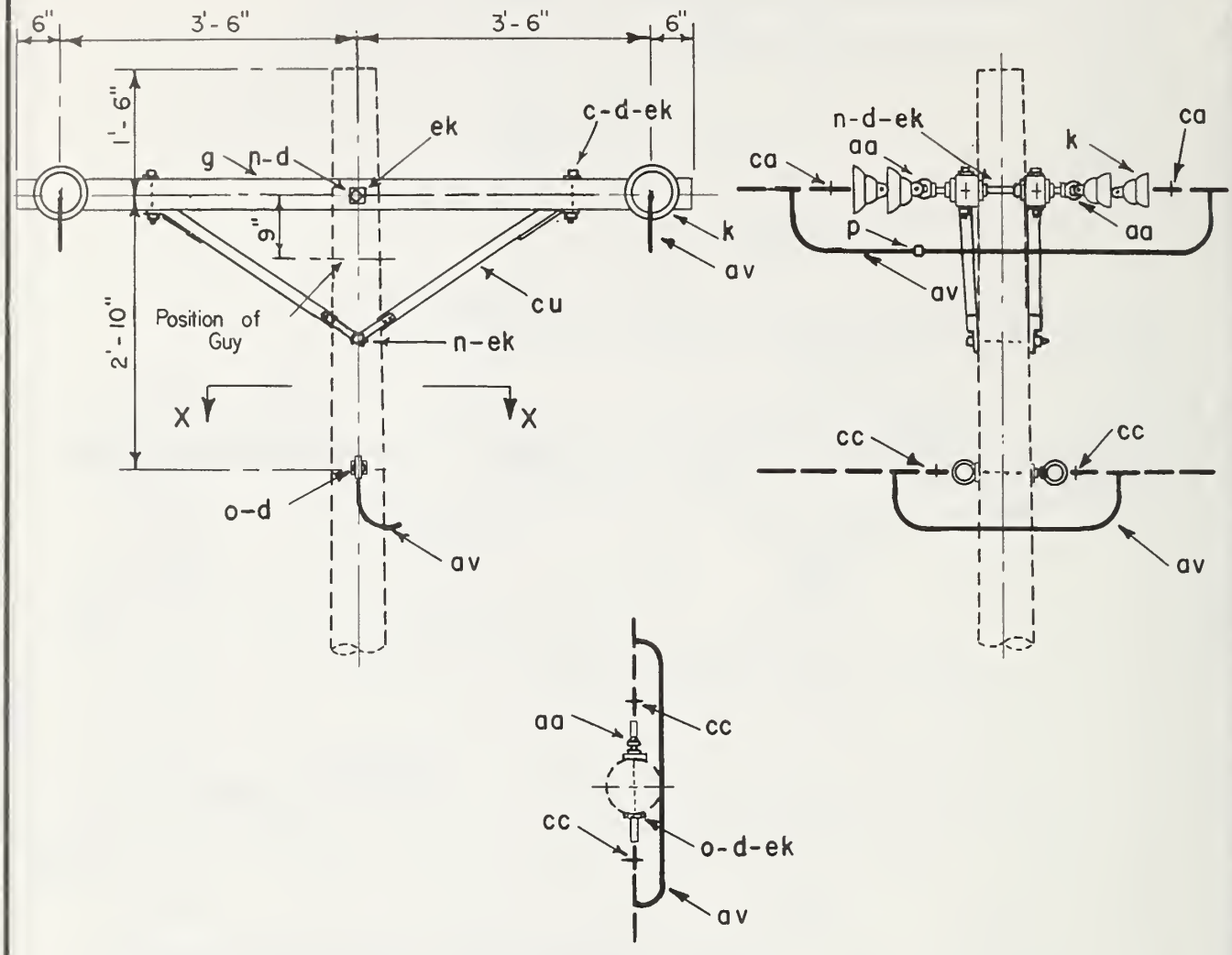
12.5/7.2 kV

TWO PHASE, CROSSARM CONSTRUCTION

DEADEND (SINGLE)

Apr., 1983

B7, B7-1



SECTION X-X

Note:

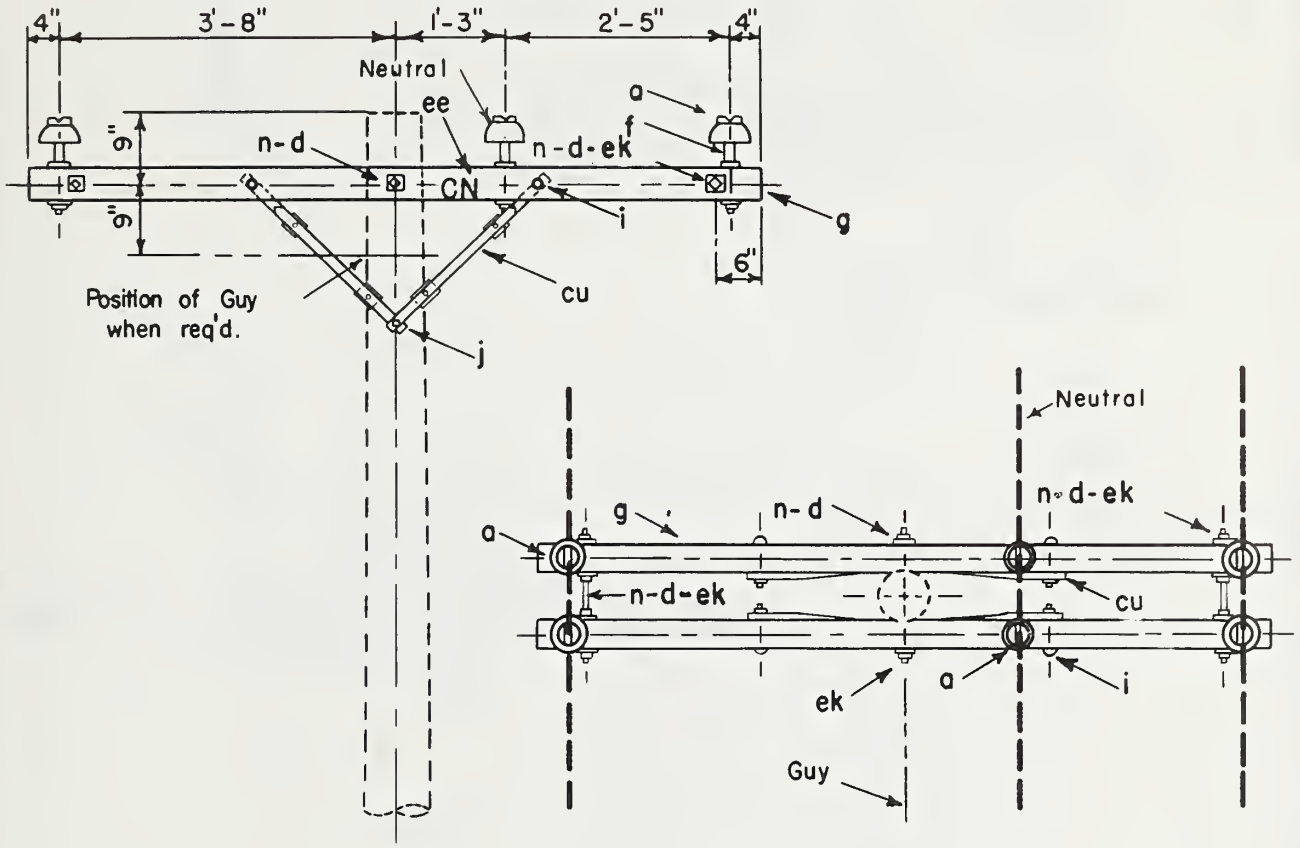
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21.

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
d	12	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole		o	1	Bolt, eye, 5/8"x req'd. length	
g	2	Crossarm, 3 5/8"x 4 5/8"x 8'-0"		p		Connectors, as required	
c	4	Bolt, machine, 1/2"x req'd. length		aa	5	Nut, eye, 5/8"	
				av	3	Jumpers, as required	
cu	2	Brace, wood, 60" span		ca	4	Deadend assembly, primary	
k	8	Insulator, suspension		cc	2	Deadend assembly, neutral	
n	4	Bolt, double arming, 5/8"x req'd. length		ek		Locknuts, as required	

12.5/7.2 kV TWO-PHASE
CROSSARM CONSTRUCTION – DEADEND (DOUBLE)

Apr., 1983

B8



PLAN

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
			cu	4	Brace, wood, 28"
a	6	Insulator, pin type	i	4	Bolt, carriage, 3/8" x 4 1/2"
d	10	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	j	2	Screw, lag, 1/2" x 4"
f	6	Pin, crossarm, steel, 5/8" x 10 3/4"	n	3	Bolt, double arming, 5/8" x req'd. length
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ek		Locknuts, as required
			ee	4	Letters, 2 "C", 2 "N", with 1" nails (B 9 only)

DESIGN LIMITS

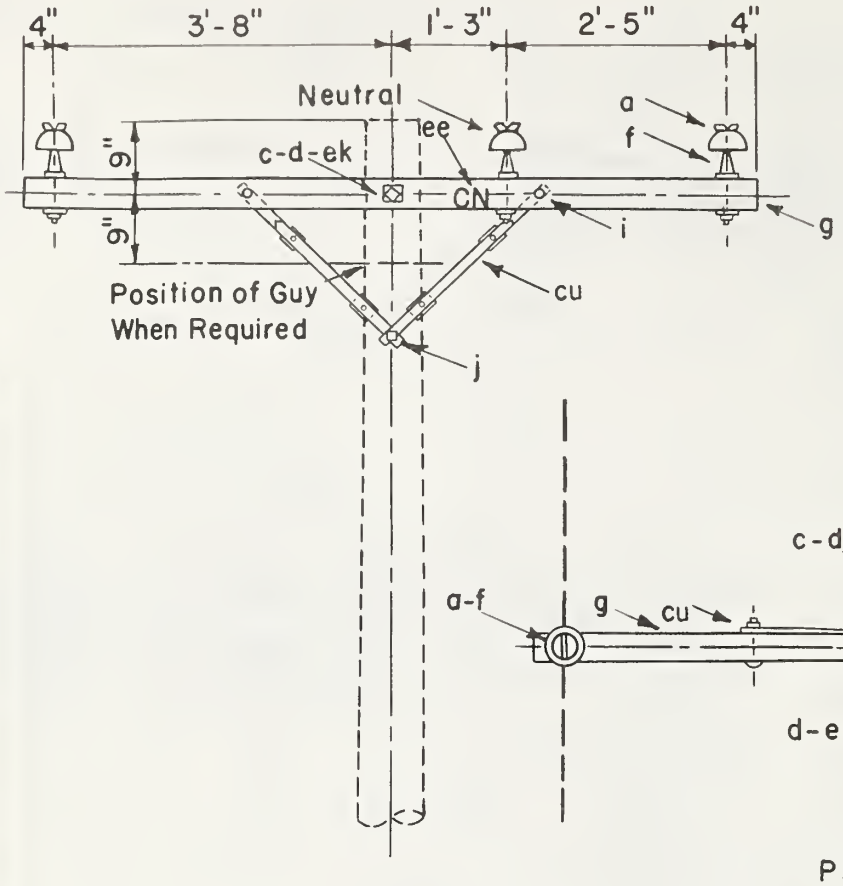
Max. transverse load: 1000 lbs. per conductor

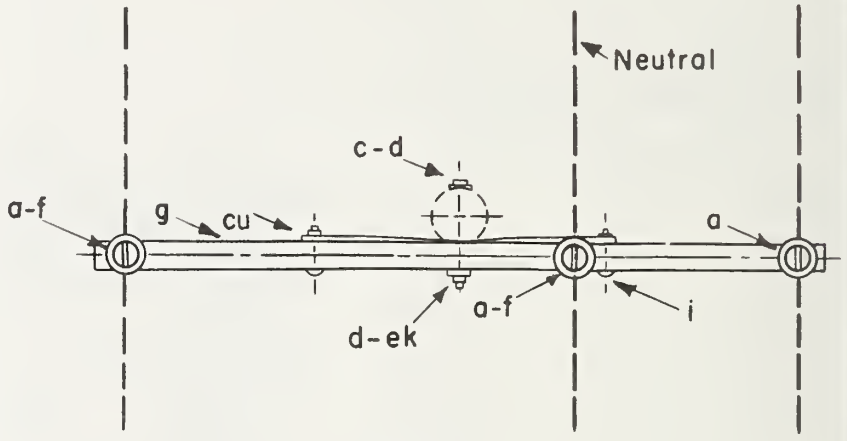
Max. line angle within load limits: 20°

12.5/7.2 kV TWO PHASE CROSSARM CONSTRUCTION - DOUBLE LINE ARM

Apr., 1983

B 9





PLAN

ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	3	Insulator, pin type	g	1	Crossarm, 3 5/8" x 4 5/8" x 8' - 0"
ee	4	Letters, 2"C", 2"N", with 1" nails	cu	2	Brace, wood, 28"
c	1	Bolt, machine, 5/8" x req'd length	i	2	Bolt, carriage, 3/8" x 4 1/2"
d	2	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	j	1	Screw, lag, 1/2" x 4"
f	3	Pin, crossarm, steel, 5/8" x 10 3/4"	e k		Locknuts, as required

DESIGN LIMITS

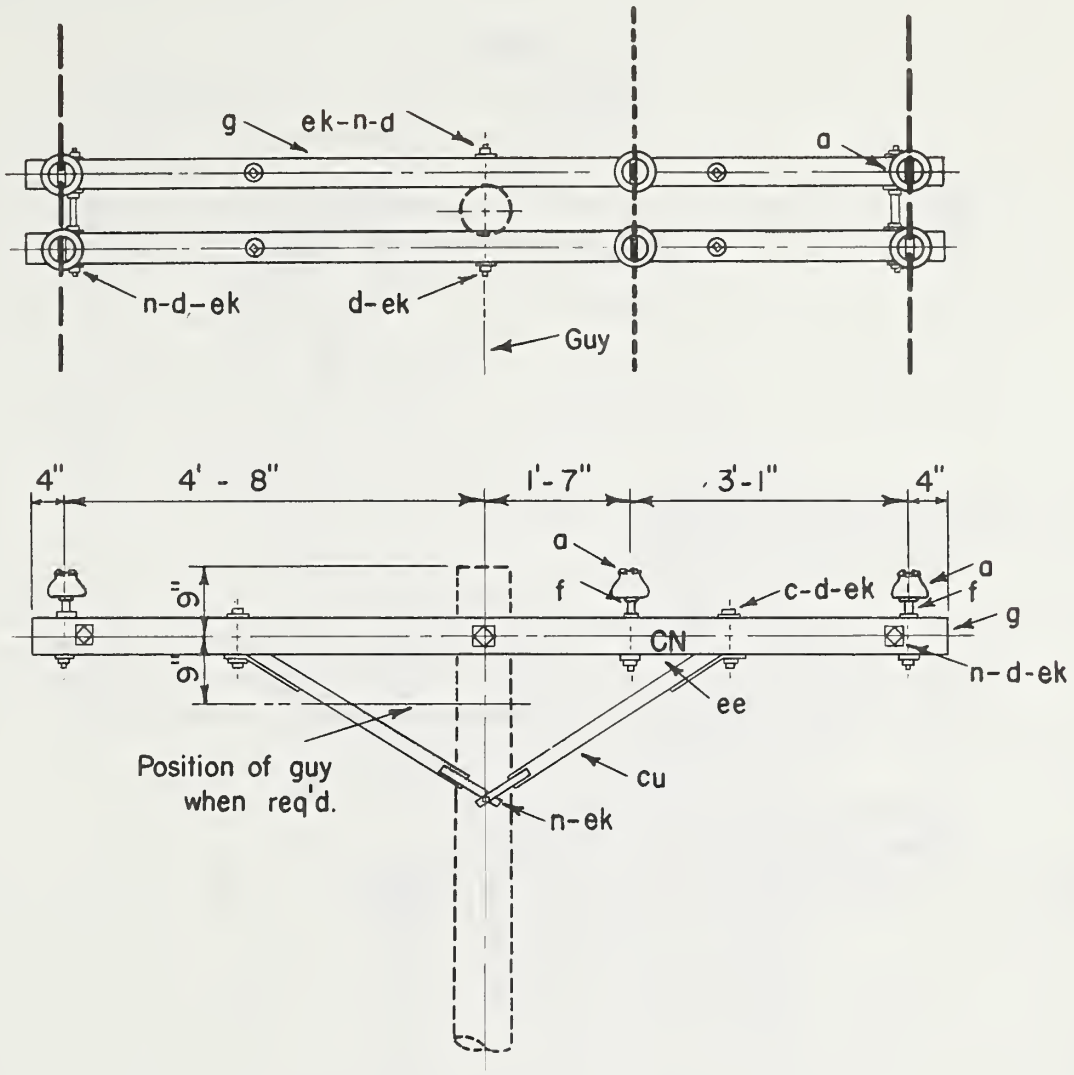
Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits 5°

12.5/7.2 kV TWO PHASE, CROSSARM CONSTRUCTION SINGLE LINE ARM

Apr., 1983

B9-1



This construction should be used where future conversion to three phase is likely.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	6	Insulator, pin type	g	2	Crossarm, 3 5/8" x 4 5/8" x 10'-0"
			n	4	Bolt, double arming, 5/8" x req'd. length
c	4	Bolt, machine, 1/2" x req'd. length	cu	2	Brace, wood, 60" span
d	10	Washer, square, 2 1/4"	ee	4	Letters, 2 "C", 2"N", with 1" nails
d	4	Washer, round, 1 3/8"	ek		Lacknuts, as required
f	6	Pin, crossarm, steel, 5/8" x 10 3/4"			

DESIGN LIMITS

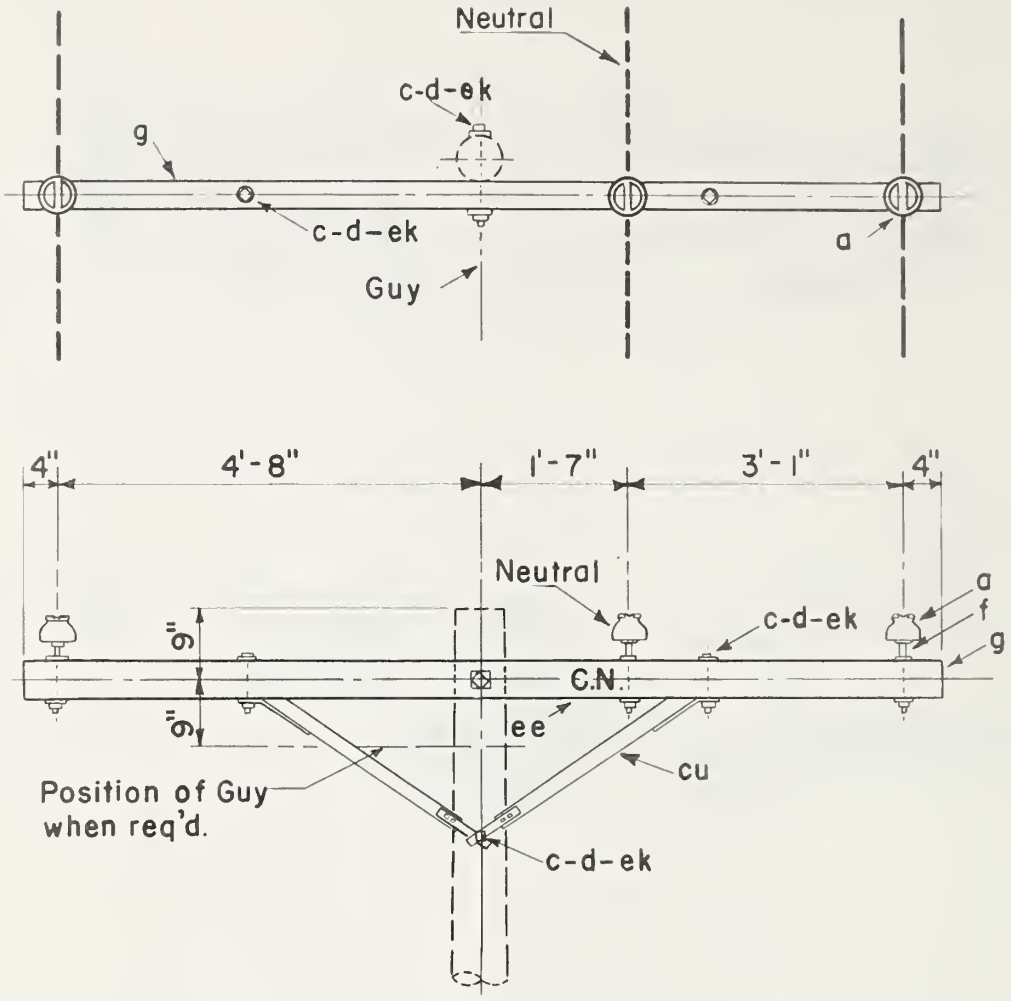
Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 20°

12.5/7.2 kV, TWO PHASE
CROSSARM CONSTRUCTION-DOUBLE LINE ARM

Apr., 1983

B9-2



This construction should be used where future conversion to three phase is likely.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	3	Insulator, pin type	f	3	Pin, crossarm, steel, 5/8" x 10 3/4"
c	2	Bolt, machine, 5/8" x req'd length	g	1	Crossarm, 3 5/8" x 4 5/8" x 10'-0"
c	2	Bolt, machine, 1/2" x req'd length	cu	1	Brace, wood, 60" span
d	3	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	ee	4	Letters, 2 "C", 2 "N" with 1" nails
d	2	Washer, round, 13/8" dia., 9/16" hole	ek		Locknuts, as required

DESIGN LIMITS

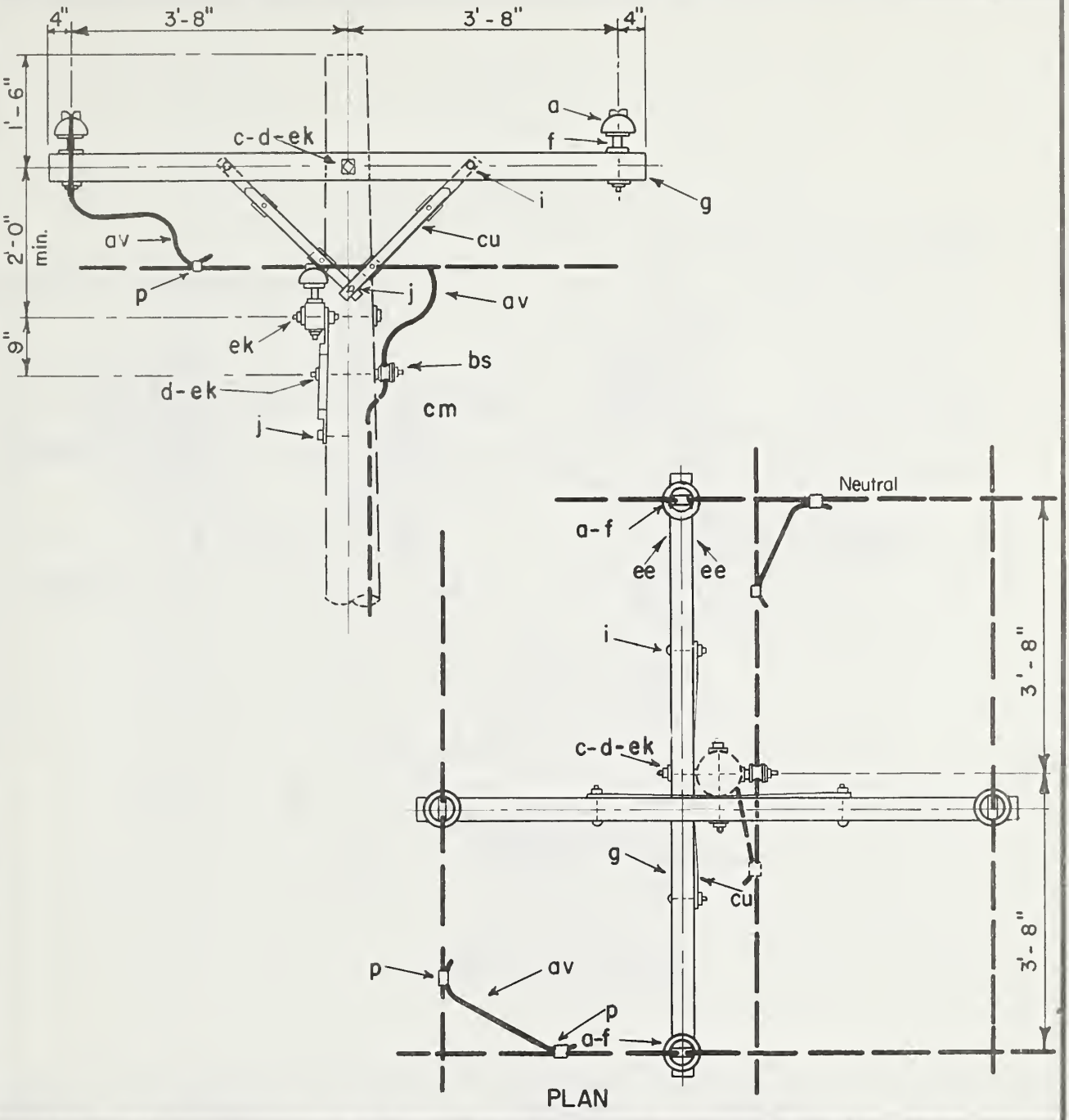
Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV
TWO-PHASE CROSSARM CONSTRUCTION
SINGLE LINE ARM

Apr., 1983

B9-3



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	3	Insulator, pin type	i	4	Bolt, carriage, 3/8" x 4 1/2"
a	1	Insulator, pin type	j	2	Screw, lag, 1/2" x 4"
c	2	Bolt, machine, 5/8" x req'd. length	p		Connectors, as req'd.
d	5	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	av		Jumpers and leads as req'd.
f	4	Pin, crossarm, steel, 5/8" x 10 1/4"	bs	1	Bolt, single upset,
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ek		Locknuts, as required
cu	4	Brace, wood, 28"	ee	4	Letters, 2"C", 2"N", with 1" nails
cm	1	Spool insulator			

DESIGN LIMITS

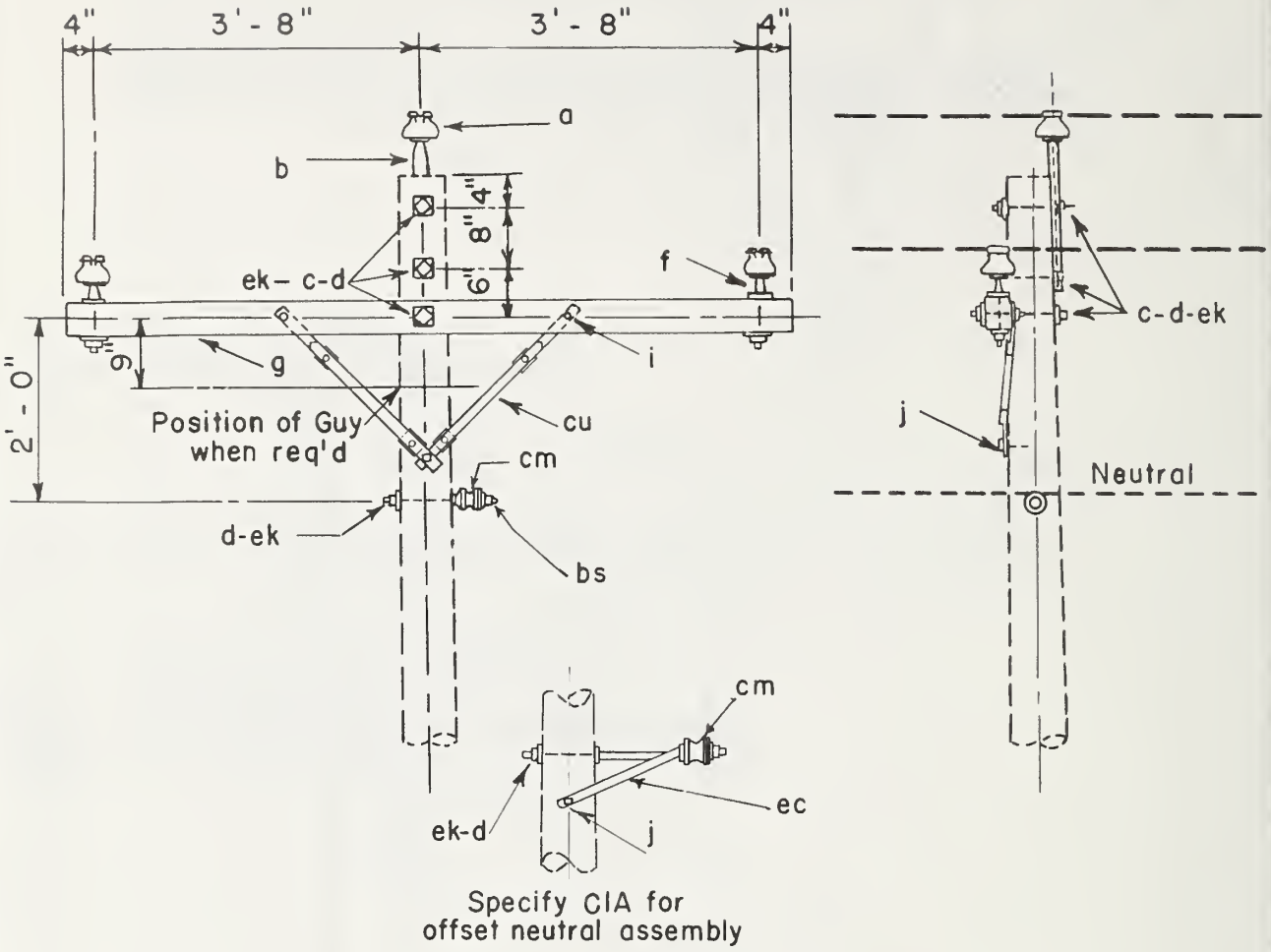
Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV
TWO PHASE, CROSSARM CONSTRUCTION
SINGLE PHASE JUNCTION

Apr., 1983

B22



Specify CIA for
offset neutral assembly

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
a	3	Insulator, pin type		cu	2	Brace, wood, 28"	
b	1	Pin, pole top, 20"		i	2	Bolt, corrioge, 3/8" x 4 1/2"	
c	3	Bolt, mochine, 5/8" x req'd length		j	1	Screw, log, 1/2" x 4" (CI only)	
d	5	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		bs	1	Bolt, single upset, (CI only)	
f	2	Pin, crossorm, steel, 5/8" x 10 3/4"		ec	1	Bracket, offset neutral (CIA only)	
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"		j	3	Screw, lag, 1/2"x4" (CIA only)	
ek		Locknuts, as required					
cm	1	Spool insulator					

DESIGN LIMITS

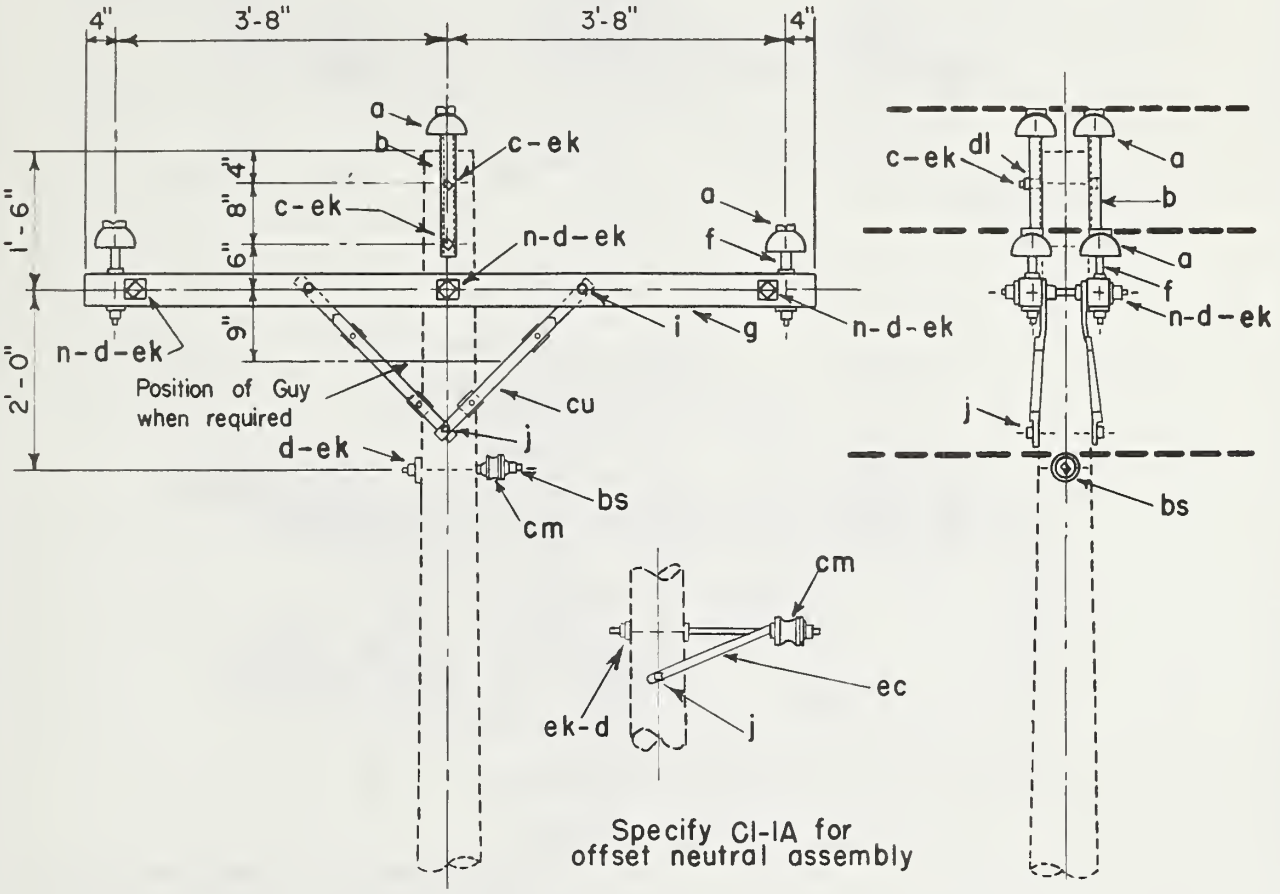
Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits: 5°

12.5 / 7.2 kV
3-PHASE CROSSARM CONSTRUCTION
SINGLE PRIMARY SUPPORT

Apr., 1983

CI, CIA



Specify CI-IA for offset neutral assembly

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	6	Insulator, pin type	i	4	Bolt, carriage, 3/8"x 4 1/2"
b	2	Pin, pole top, 20"	j	2	Screw, lag, 1/2" x 4" (CI-I only)
c	2	Bolt, machine, 5/8" x req'd. length	n	3	Bolt, double arming, 5/8" x req'd. length
d	11	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	bs	1	Bolt, single upset, (CI-I only)
f	4	Pin, crossarm, steel, 5/8" x 10 3/4"	dl	2	Pipe spacer, 3/4" dia. x 1 1/2"
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ec	1	Bracket, offset neutral (CI-IA only)
cu	4	Brace, wood, 28"	j	4	Screw, lag, 1/2"x 4" (CI-IA only)
ek		Locknuts, as required	cm	1	Spool insulator

DESIGN LIMITS

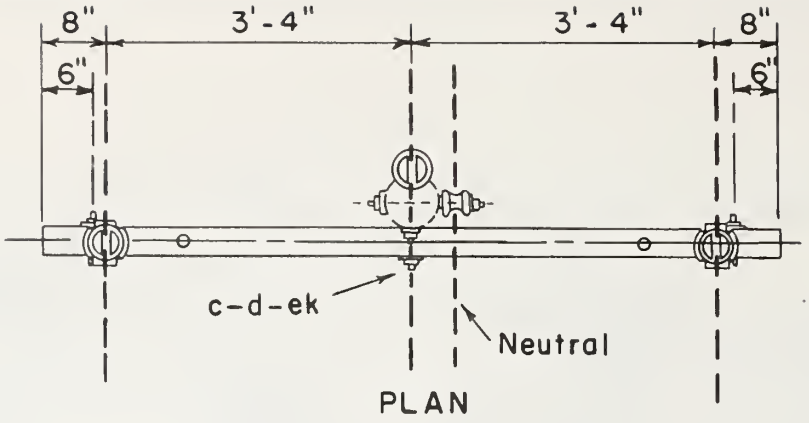
Max. transverse load: 1000 lbs per conductor

Max. line angle within load limits: 5°

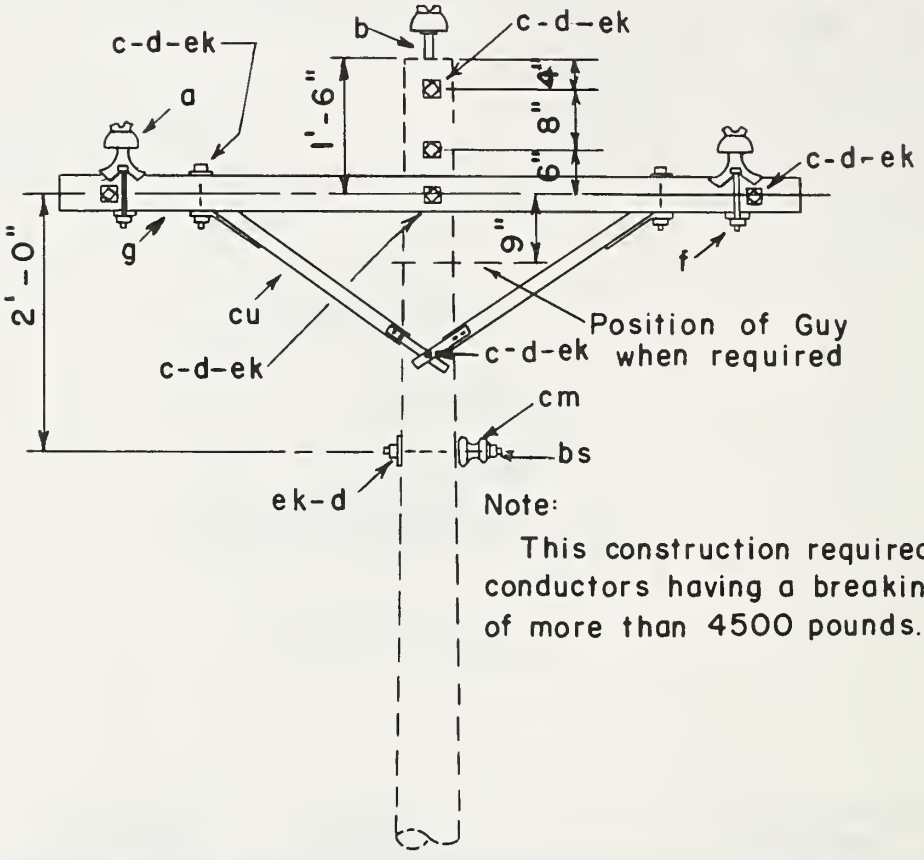
12.5/7.2 kV 3-PHASE CROSSARM CONSTRUCTION DOUBLE PRIMARY SUPPORT

Apr., 1983

CI-I, CI-IA



PLAN



Note:

This construction required for all conductors having a breaking strength of more than 4500 pounds.

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
a	3	Insulator, pin type		f	2	Pin, crossorm, clomp type	
b	1	Pin, pole top, 20"		g	1	Crossorm, 3 5/8" x 4 5/8" x 8'-0"	
c	6	Bolt, mochine, 5/8" x req'd length		bs	1	Bolt, single upset	
c	2	Bolt, machine, 1/2" x req'd length		cu	1	Broce, wood, 60" span	
d	10	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		ek		Locknuts, as required	
d	2	Washer, rd. 1 3/8" diom., 9/16" hole		cm	1	spool insulator	

DESIGN LIMITS

Mox. tronsverse lood 500 lbs. per conductor

Max. line ongle within load limits: 2°

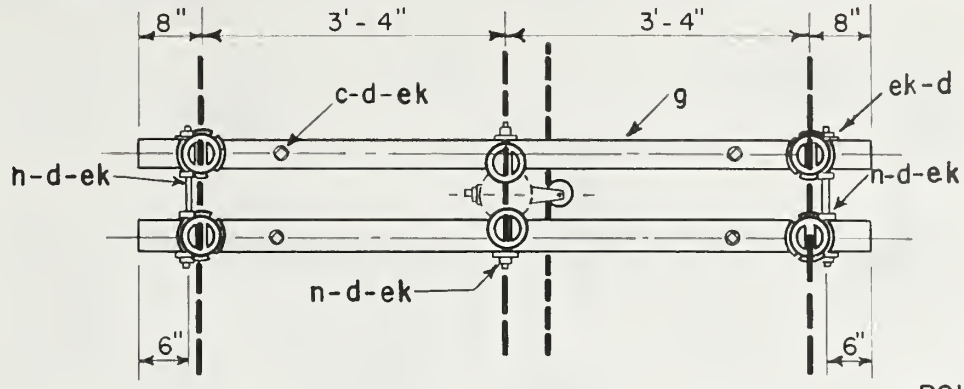
12.5/7.2 kV

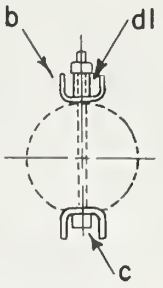
3-PHASE CROSSARM CONSTRUCTION

(LARGE CONDUCTORS)

Apr., 1983

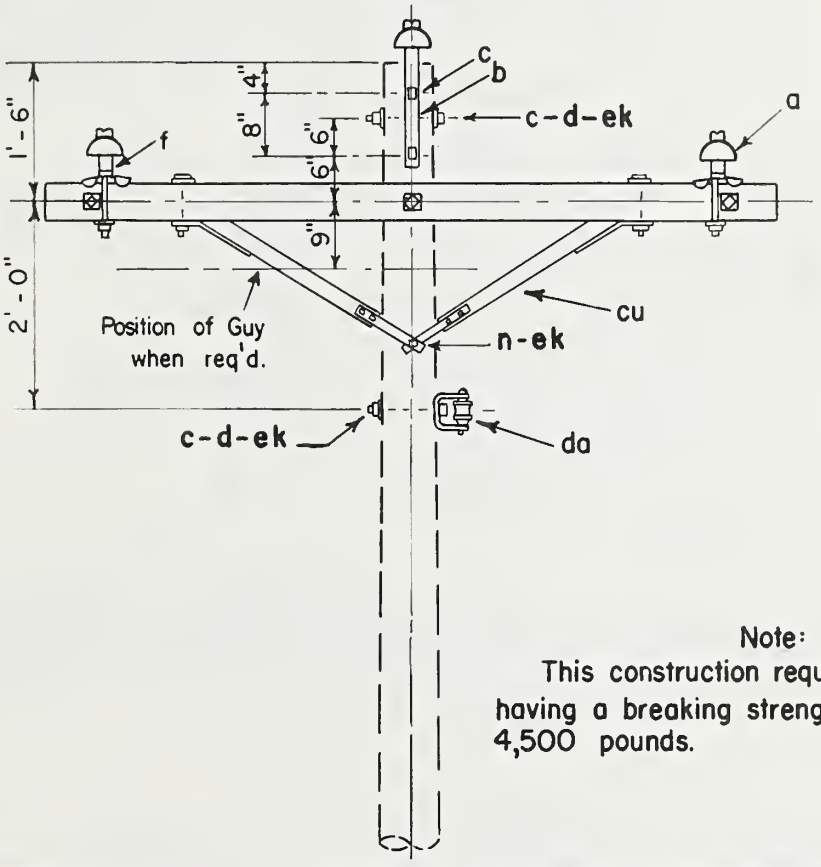
C1-2





DETAIL OF POLE TOP PIN ASSEMBLY

PLAN



Note:
This construction required for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	6	Insulator, pin type	g	2	Crossarm, 3 5/8"x4 5/8"x 8'-0"
b	2	Pin, pole top, 20"	n	4	Bolt, double arming, 5/8"x req'd. length
c	4	Bolt, machine, 5/8"x req'd. length	cu	2	Brace, wood, 60" span
c	4	Bolt, machine, 1/2"x req'd. length	da	1	Bracket, insulated
d	13	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	dl	2	Pipe spacer, 3/4" dia. x 1 1/2"
d	4	Washer, rd., 1 3/8" diam., 9/16" hole	ek		Lacknuts, as required
f	4	Pin, crossarm, steel, clamp type			

DESIGN LIMITS

Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 5°

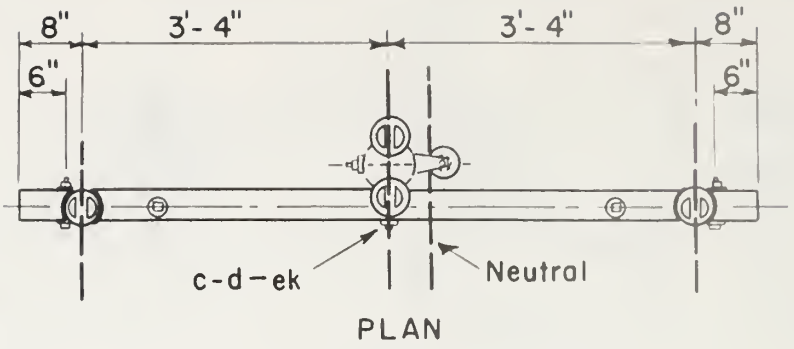
12.5/7.2 kV

3-PHASE, CROSSARM CONSTRUCTION

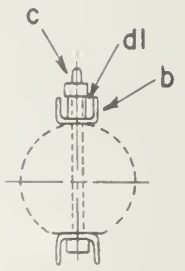
DOUBLE PRIMARY SUPPORT, (LARGE CONDUCTORS)

Apr., 1983

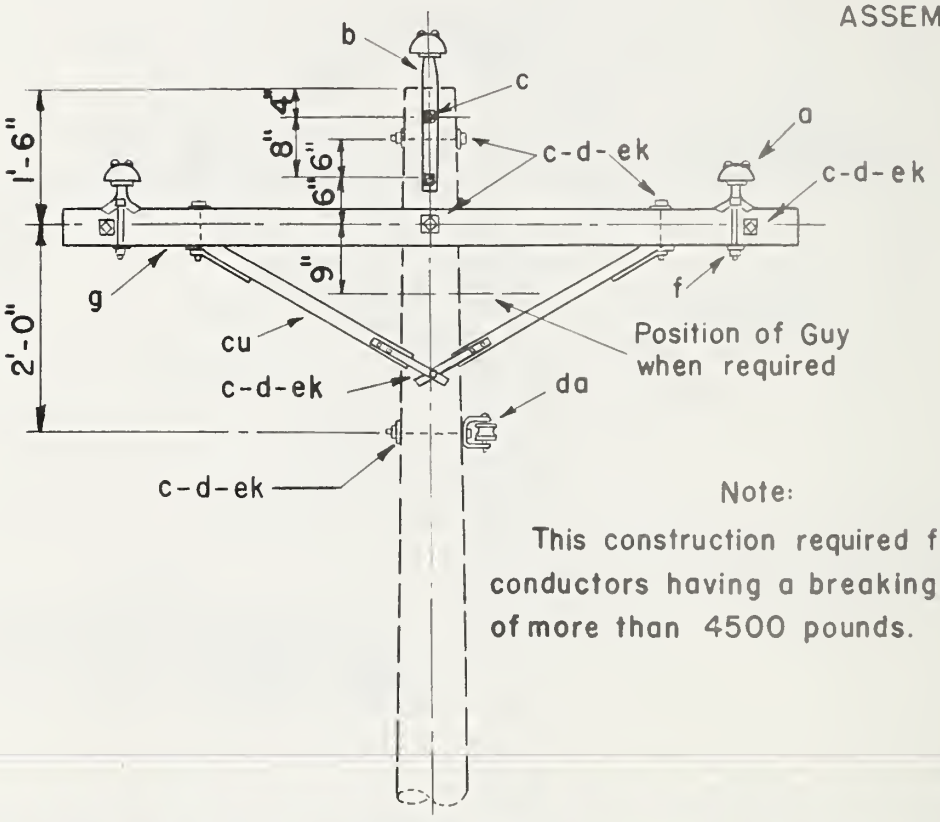
C1-3



PLAN



POLE TOP PIN ASSEMBLY



Note:

This construction required for all conductors having a breaking strength of more than 4500 pounds.

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL
a	4	Insulator, pin type		g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"
b	2	Pin, pole top, 20"		cu	1	Brace, wood, 60" span
c	8	Bolt, machine, 5/8" x req'd length		da	1	Bracket, insulated
c	2	Bolt, machine, 1/2" x req'd length		dl	2	Pipe spacer, 3/4" dia. x 1 1/2"
d	10	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		ek		Locknuts, as required
d	2	Washer, rd., 1 3/8" diam., 9/16" hole				
f	2	Pin, crossarm, clamp type				

DESIGN LIMITS

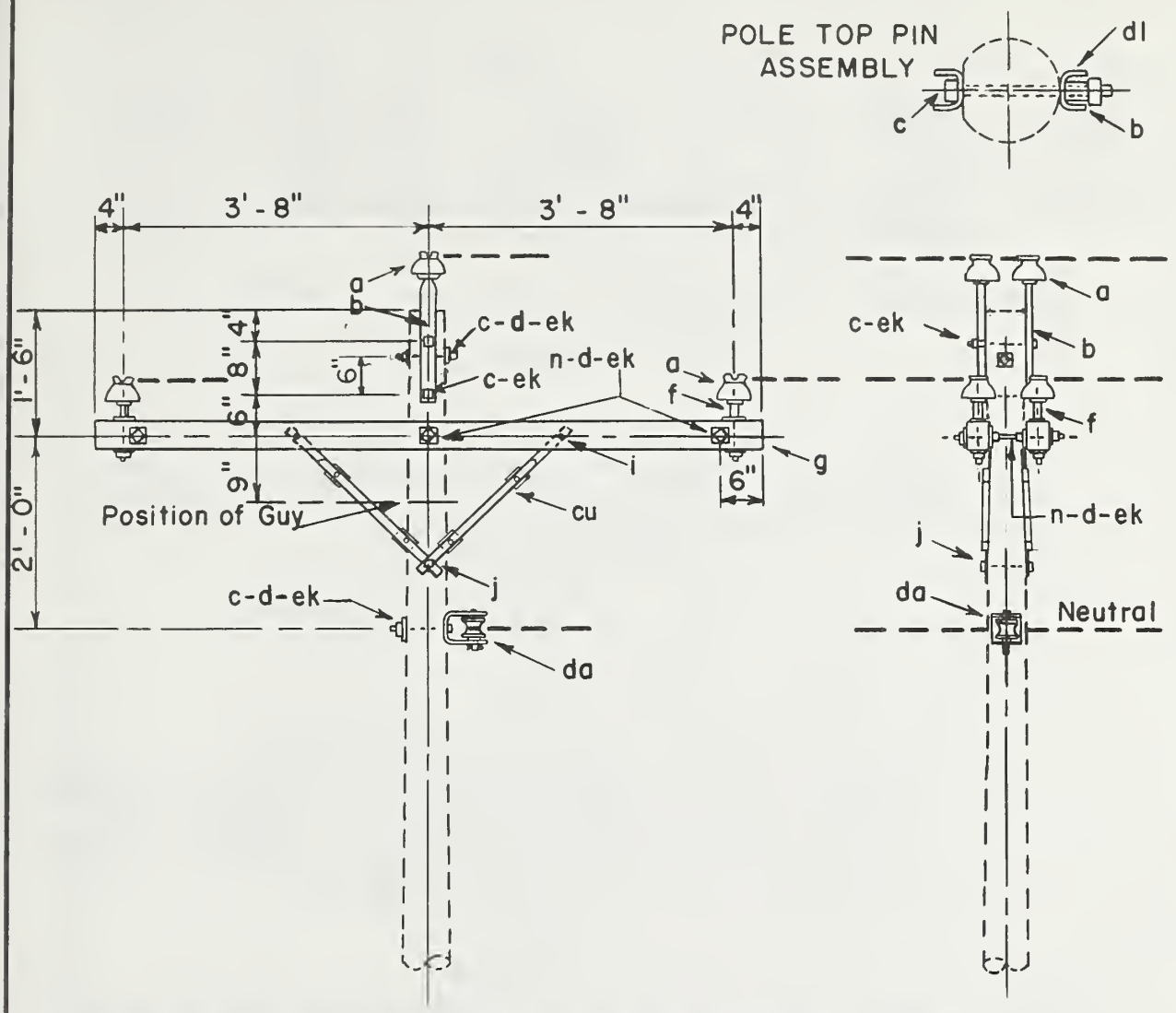
Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV 3-PHASE CROSSARM CONSTRUCTION (LARGE CONDUCTORS)

Apr., 1983

C1-4



NOTE: When the transverse load is more than 1000 pounds, substitute C2-1 or C2-2 as required.

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
a	6	Insulator, pin type		i	4	Bolt, carriage, $\frac{3}{8}$" x $4\frac{1}{2}$"	
b	2	Pin, pole top, 20"		j	2	Screw, lag, $\frac{1}{2}$" x 4"	
c	4	Bolt, machine, $\frac{5}{8}$" x req'd length		n	3	Bolt, double arming, $\frac{5}{8}$" x req'd l'gth	
d	13	Washer, $2\frac{1}{4}$" x $2\frac{1}{4}$" x $\frac{3}{16}$", $\frac{13}{16}$" hole		da	1	Bracket, insulated	
f	4	Pin, crossarm, steel, $\frac{5}{8}$" x $10\frac{3}{4}$"		dl	2	Pipe, spacer, $\frac{3}{4}$" dia. x $1\frac{1}{2}$"	
g	2	Crossarm, 3 5/8" x 4 5/8" x 8' - 0"		ek		Locknuts, as required	
cu	4	Brace, wood, 28"					

DESIGN LIMITS

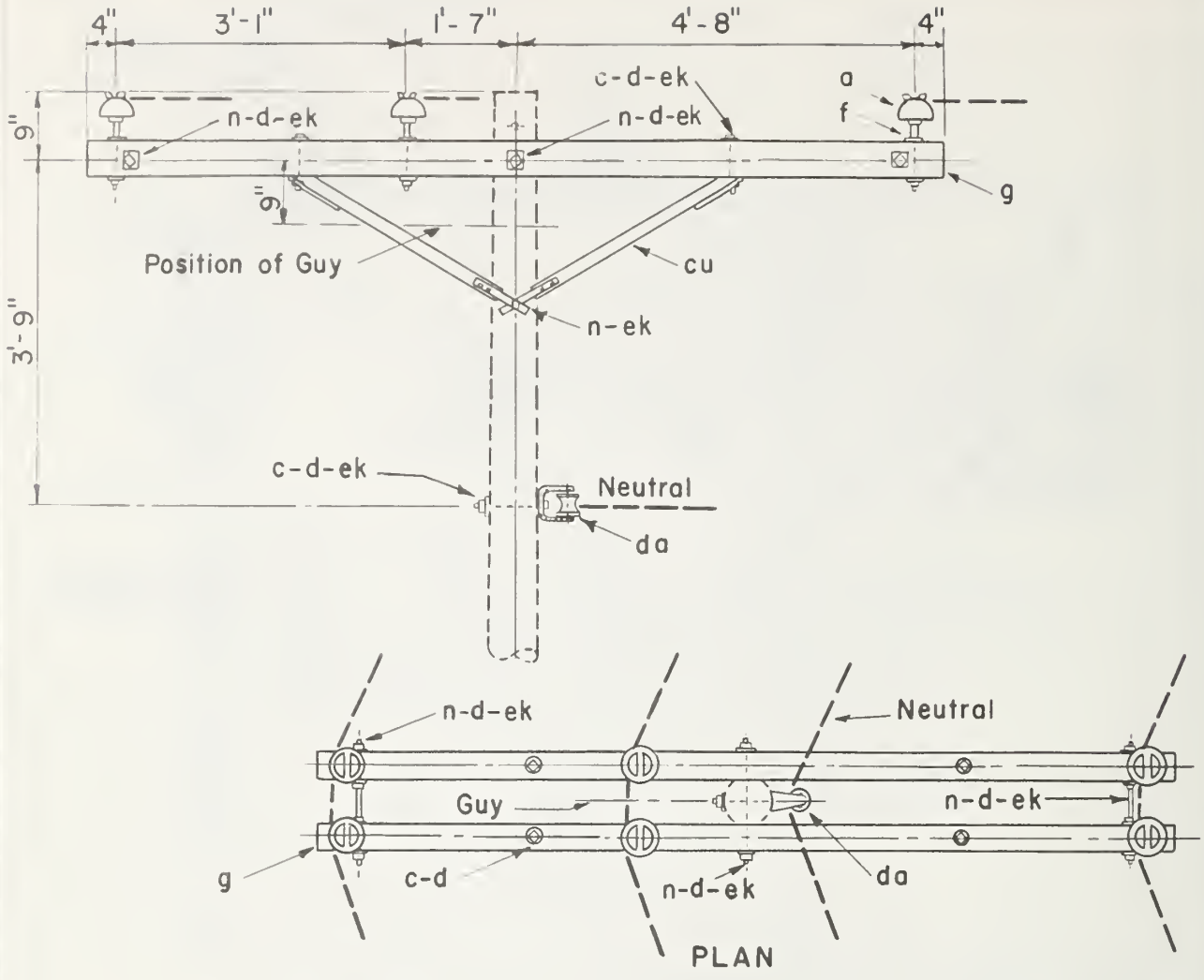
Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 20°

12.5/7.2 kV - 3 PHASE
CROSSARM CONSTR. DOUBLE PRIMARY SUPPORT

Apr., 1983

C 2



Notes: Center phase wire or neutral wire may be located on the opposite side of the pole where necessary to avoid crossing of wires in midspan.

When the transverse load is more than 1000 pounds per conductor install a $2\frac{1}{4}$" x $2\frac{1}{4}$" x $\frac{3}{16}$" washer on the top of the crossarm for each pin. If the load is more than 1500 pounds, use the construction shown on C2-2.

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
a	6	Insulator, pin type		g	2	Crossarm 3 5/8" x 4 5/8" x 10'-0"	
c	1	Bolt, machine, $\frac{5}{8}$" x req'd length		n	4	Bolt, double arming, $\frac{5}{8}$" x req'd length	
c	4	Bolt, machine, $\frac{1}{2}$" x req'd length		cu	2	Brace, wood, 60" span	
d	11	Washer, $2\frac{1}{4}$" x $2\frac{1}{4}$" x $\frac{3}{16}$", $\frac{13}{16}$" hole		da	1	Bracket, insulated	
d	4	Washer, rd., $1\frac{3}{8}$" diam., $\frac{9}{16}$" hole		ek		Locknuts, as required	
f	6	Pin, crossarm, steel, $\frac{5}{8}$" x $10\frac{3}{4}$"					

DESIGN LIMITS

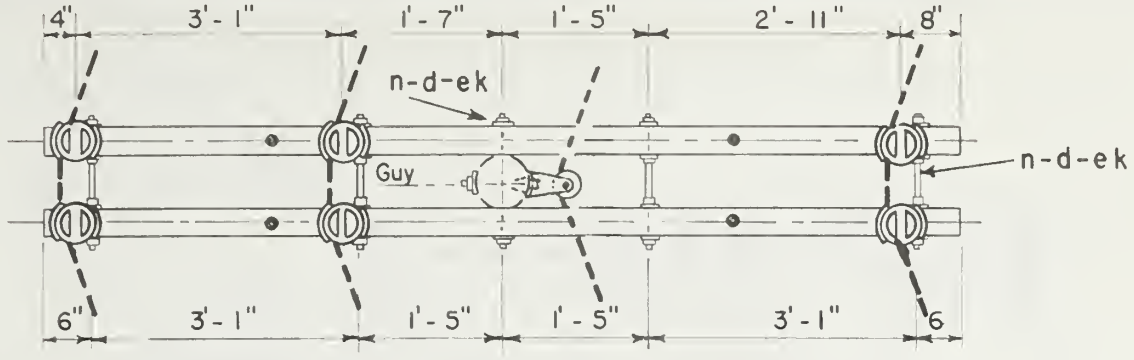
Max. transverse load: 1500 lbs. per conductor

Max. line angle within load limits: 20°

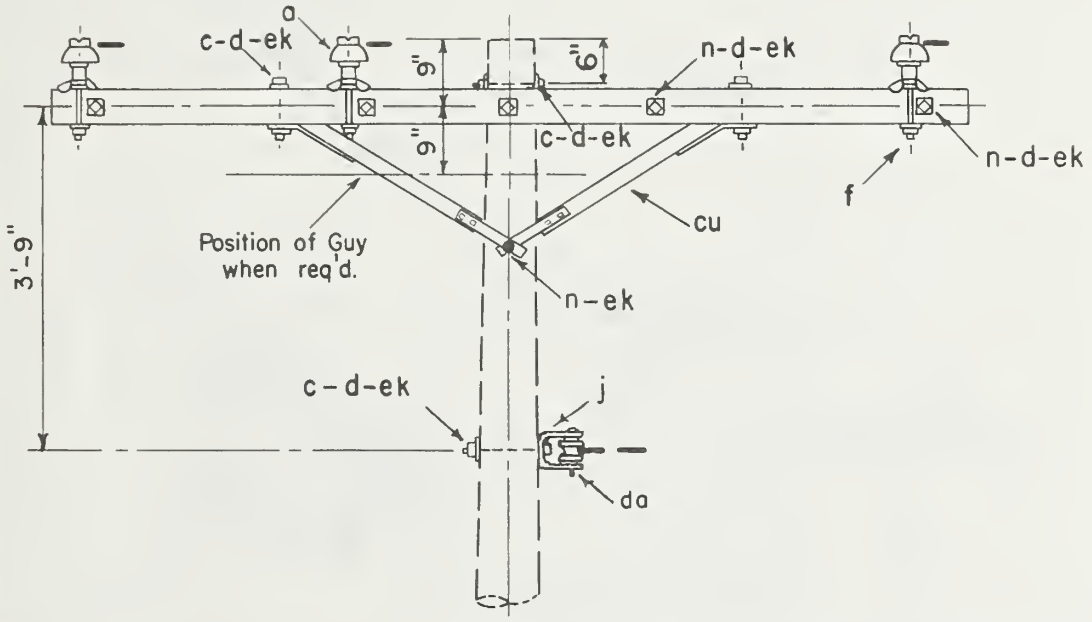
12.5/7.2 kV 3-PHASE
CROSSARM CONSTR. DOUBLE PRIMARY SUPPORT

Apr., 1983

C2-1



PLAN



Notes:

1. Side groove of insulator must always be larger than the overall diameter of conductor including armor rods when required.
2. Center phase wire or neutral wire may be located on the opposite side of the pole where necessary to avoid crossing of wires in midspan.
3. This construction required for all conductors having a breaking strength of more than 4,500 pounds.
4. If transverse load exceeds 2000 pounds per conductor, use vertical construction.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	6	Insulator, pin type	j	2	Screw, lag, 1/2" x 4"
c	2	Bolt, machine, 5/8" x req'd. length	n	6	Bolt, double arming, 5/8" x req'd. length
c	4	Bolt, machine, 1/2" x req'd. length	da	1	Bracket, neutral, insulated
d	21	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole			
d	4	Washer, rd., 1 3/8" diam., 9/16" hole	cu	2	Brace, wood, 60" span
f	6	Pin, crossarm, steel, clamp type	ek		Locknuts, as required
g	2	Crossarm, 3 5/8" x 4 5/8" x 10'-0"			

DESIGN LIMITS

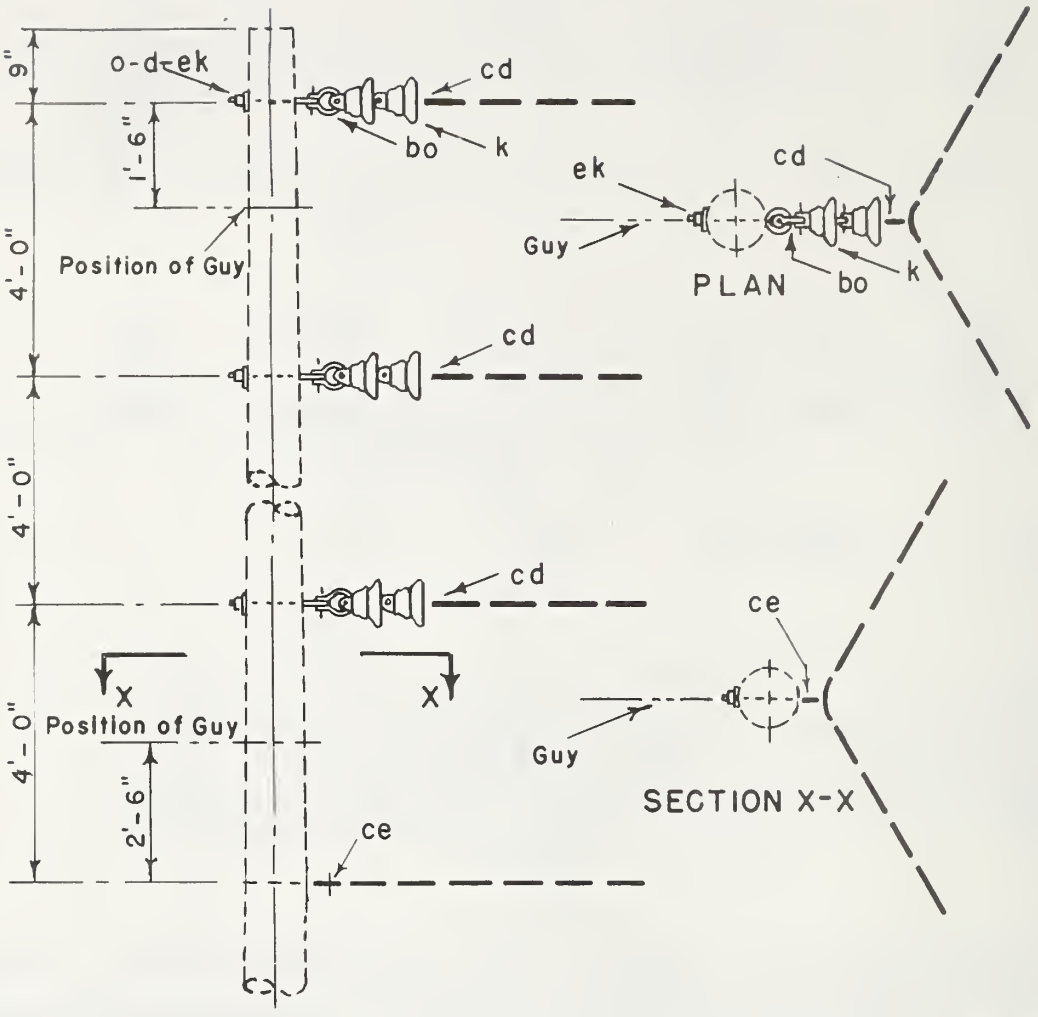
Max. transverse load: 2000 lbs. per conductor

Max. line angle within load limits: 20°

12.5/7.2 kV 3-PHASE CROSSARM CONSTR. DOUBLE PRIMARY SUPPORT (LARGE CONDUCTORS)

Apr., 1983

C2-2



NOTE: Items cd and ce are shown on assembly drawings M41-1 and M41-10

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
				bo	3	Shackle, anchor	
d	3	Washer, 2 1/4"x 2 1/4", x 3/16", 13/16" hole		cd	3	Angle assembly, primary	
k	6	Insulator, suspension		ce	1	Angle assembly, neutral	
o	3	Bolt, eye, 5/8" x req'd. length		ek		Locknuts , as required	

DESIGN LIMITS

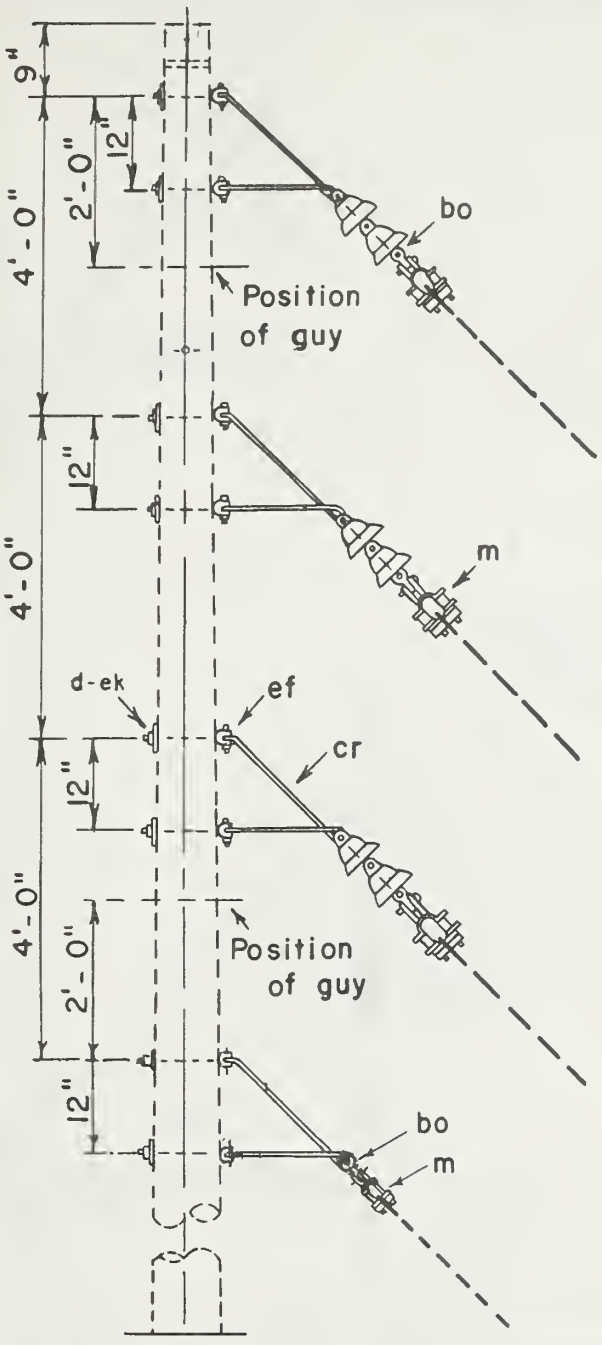
Max. transverse load: 4000 lbs. per conductor

Angle: 20° - 60°

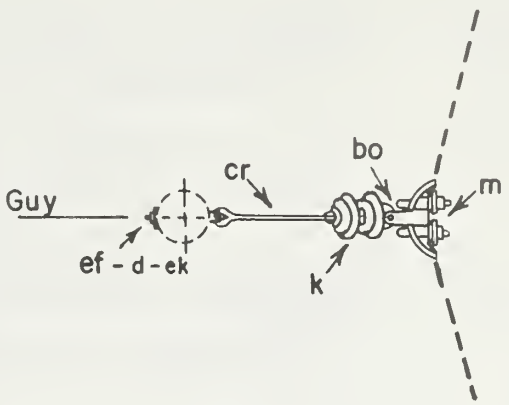
12.5/7.2 kV - THREE PHASE VERTICAL CONSTRUCTION

Apr., 1983

C 3



ELEVATION



PLAN

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
d	8	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		bo	4	Shackle, anchor	
k	6	Insulator, suspension		cr	4	Bracket, angle, 5/8"	
m	4	Clamp, suspension		ef	8	Bolt, clevis, 5/8" x req'd length	
				ek		Locknuts, as required	

DESIGN LIMITS

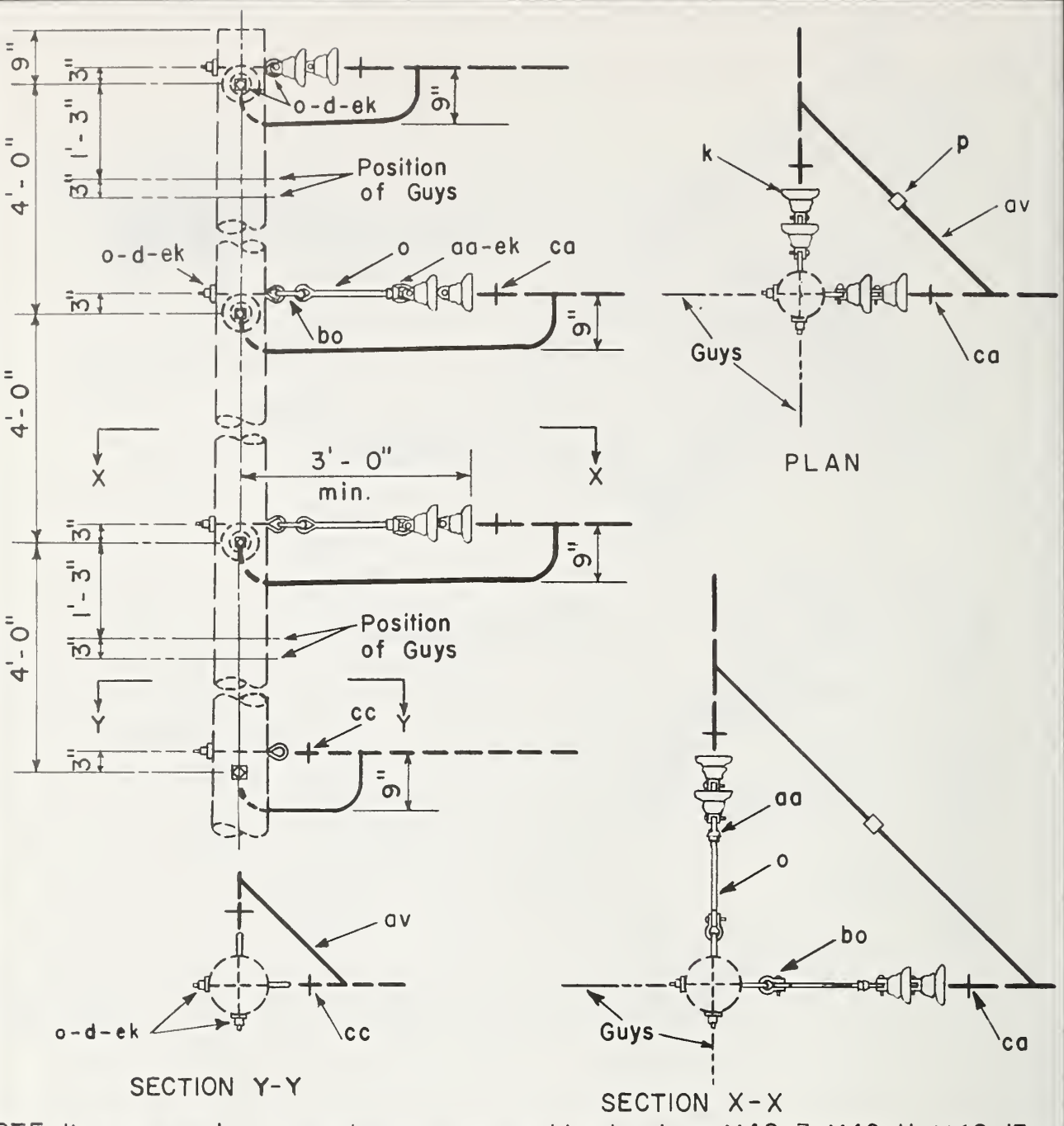
Max. transverse load: 4000 lbs. per conductor

Angle: 10°- 20°

12.5/7.2 kV,
VERTICAL CONSTRUCTION 3 - PHASE
(LARGE CONDUCTORS)

Apr., 1983

C3-1



NOTE: Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

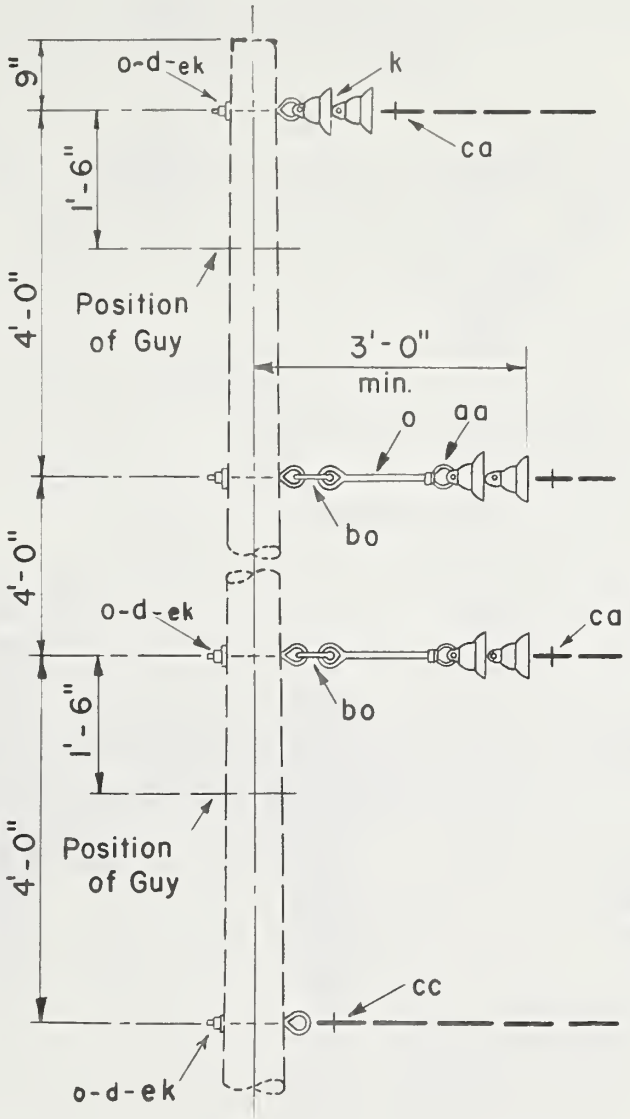
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
d	8	Washer, square, 2 1/4"		av		Jumpers, as required	
k	12	Insulator, suspension		bo	4	Shackle, anchor	
o	12	Bolt, eye, 5/8" x required length		ca	6	Deadend assembly primary	
p		Connectors, as required		cc	2	Deadend assembly neutral	
aa	4	Nut, eye, 5/8"		ek		Locknuts, as required	

DESIGN LIMITS
Angle: 60°-90°

12.5/7.2 kV, 3-PHASE
VERTICAL CONSTRUCTION

Apr., 1983

C4-1



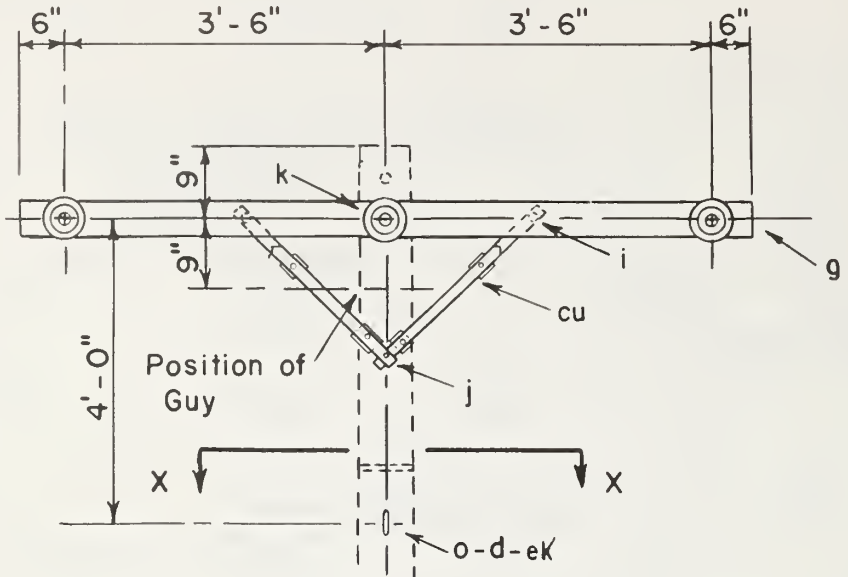
NOTE: Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

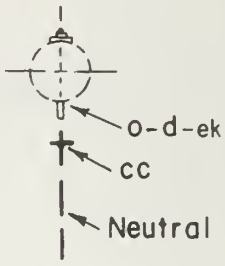
ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL
d	4	Washer, $2\frac{1}{4}$" x $2\frac{1}{4}$" x $\frac{3}{16}$", $\frac{13}{16}$" hole		ca	3	Deadend assembly, primary
k	6	Insulator, suspension		cc	1	Deadend assembly, neutral
o	6	Bolt, eye, $\frac{5}{8}$" x req'd length		ek		Locknuts, as required
aa	2	Nut, eye, $\frac{5}{8}$"				
bo	2	Shackle, anchor				

12.5/7.2 kV,
3-PHASE, VERTICAL CONSTRUCTION
DEADEND (SINGLE)

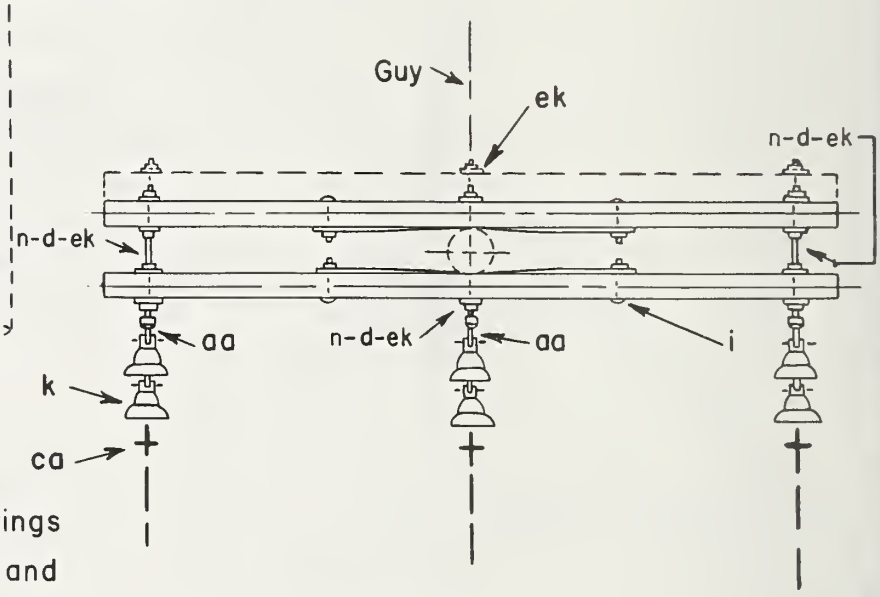
Apr., 1983

C5-1





SECTION X-X



PLAN

NOTES:

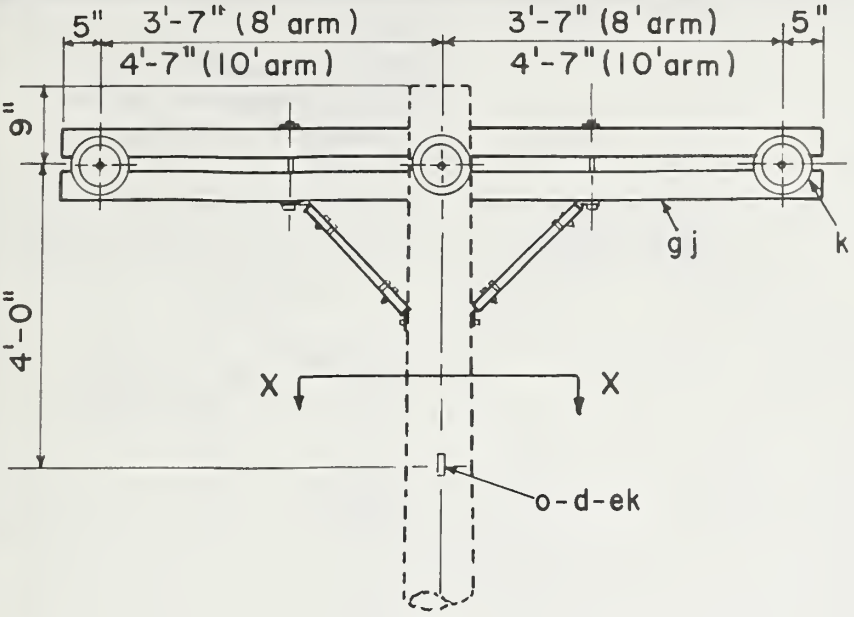
1. See dwg. E5-1 for crossarm loading limitations.
2. Designate as C7-1 for assembly with three crossarms.
3. Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

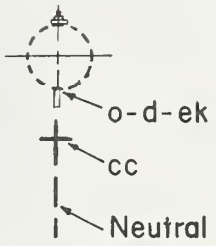
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
d	11	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		n	3	Bolt, double arming, 5/8" x req'd l'gth	
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"		o	1	Bolt, eye, 5/8" x req'd length	
cu	4	Brace, wood, 28"		aa	3	Nut, eye, 5/8"	
i	4	Bolt, carriage, 3/8" x 4½"		ca	3	Deadend assembly, Primary	
j	2	Screw, lag, ½" x 4"		cc	1	Deadend assembly, Neutral	
k	6	Insulator, suspension		ek		Locknuts, as required	

12.5/7.2 kV, 3-PHASE CROSSARM CONSTRUCTION DEAD END (SINGLE)

Apr., 1983

C7, C7-1

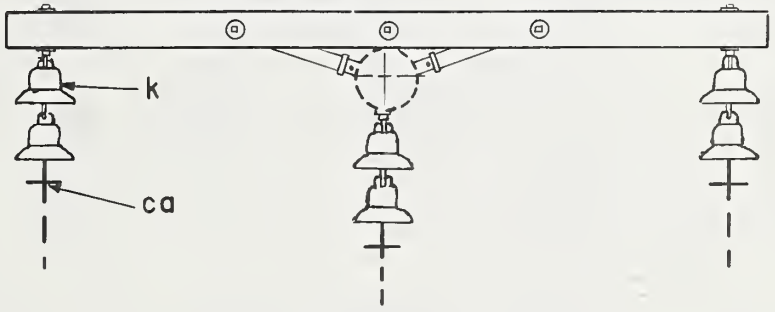




SECTION X-X

NOTE:

Items ca and cc are shown on assembly drawing M42-11, M42-13, and M42-21.



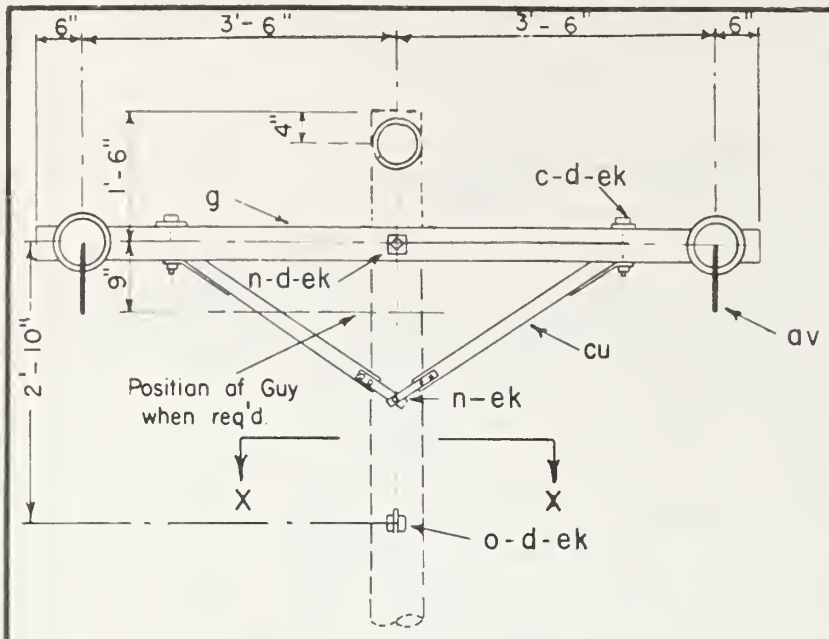
PLAN

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
d	1	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		g j	1	Crossarm assembly	
k	6	Insulator, suspension					
o	1	Bolt, eye, 5/8" x req'd length					
ca	3	Deadend assembly, Primary					
cc	1	Deadend assembly, Neutral					
ek		Locknuts, as required					

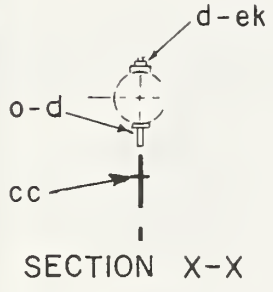
12.5/7.2 kV, 3-PHASE CROSSARM CONSTRUCTION DEAD END (SINGLE)

Apr., 1983

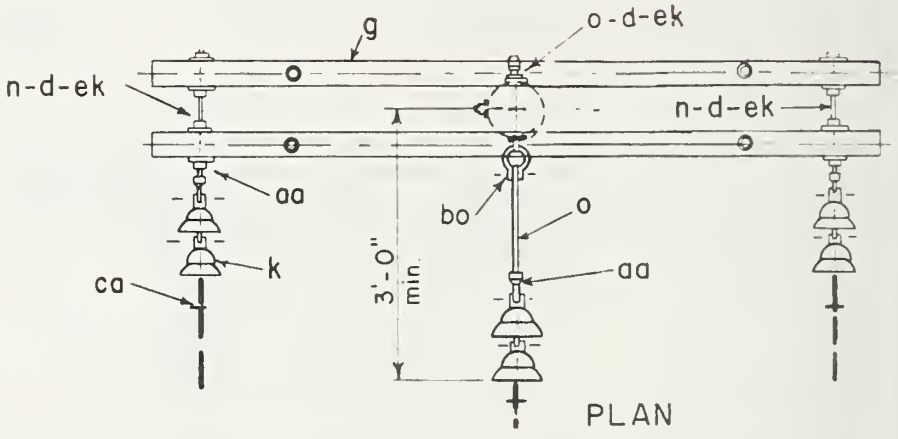
C 7A



NOTE:
Use this assembly when future conversion to C8 is likely.



SECTION X-X



PLAN

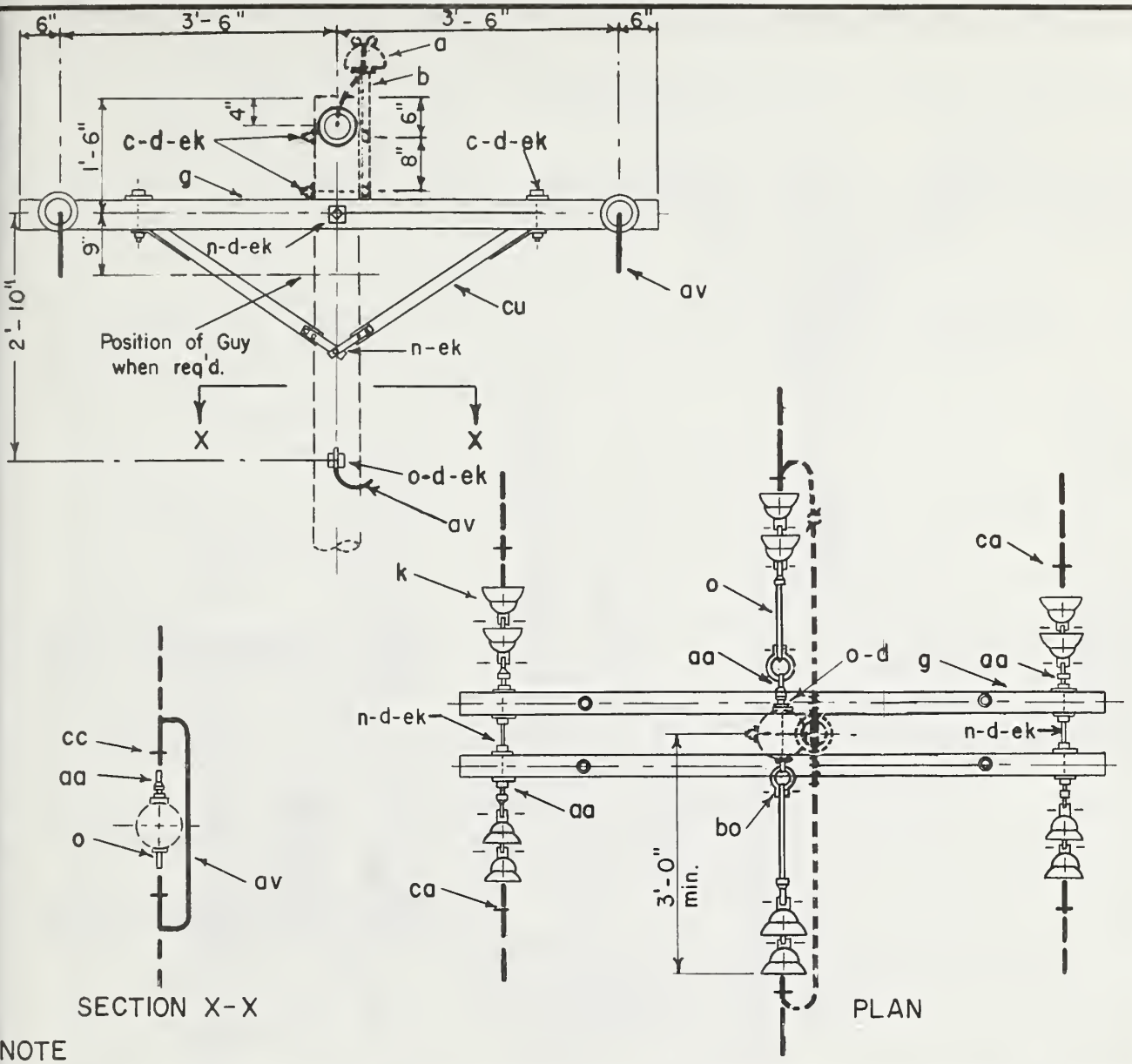
NOTE
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
			o	3	Bolt, eye, 5/8" x req'd length
			p		Connectors, as req'd.
c	4	Bolt, machine, 1/2" x req'd length	aa	3	Nut, eye, 5/8"
d	14	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	a		Jumpers and leads as req'd.
d	4	Washer, round, 1 3/8" diam., 9/16" hole	ba	1	Shackle, anchor
:			ca	3	Deadend assembly, primary
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	cc	1	Deadend assembly, neutral
k	6	Insulators, suspension	cu	2	Brace, wood, 60" span
n	4	Bolt, double arming, 5/8" x req'd length	ek		Locknuts, as required

12.5/7.2 kV 3-PHASE
CROSSARM CONSTRUCTION, DEADEND (SINGLE)

Apr., 1983

C7-2



NOTE

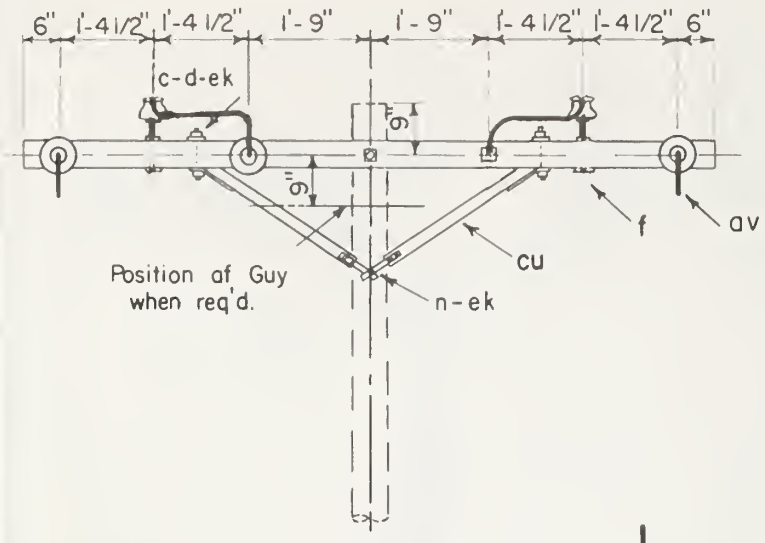
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
				a	4	Bolt, eye, 5/8" x req'd. length	
				p		Connectars, as req'd.	
c	4	Bolt, machine, 1/2" x req'd. length		aa	8	Nut, eye, 5/8"	
d	14	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole		av		Jumpers and leads as req'd.	
d	4	Washer, round, 1 3/8" diam., 9/16" hole		ba	2	Shackle, anchor	
				ca	6	Deadend assembly, primary	
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"		cc	2	Deadend assembly, neutral	
k	12	Insulators, suspension		cu	2	Brace, wood, 60" span	
n	4	Bolt, double arming, 5/8"x req'd. length		ek		Lacknuts, as required	

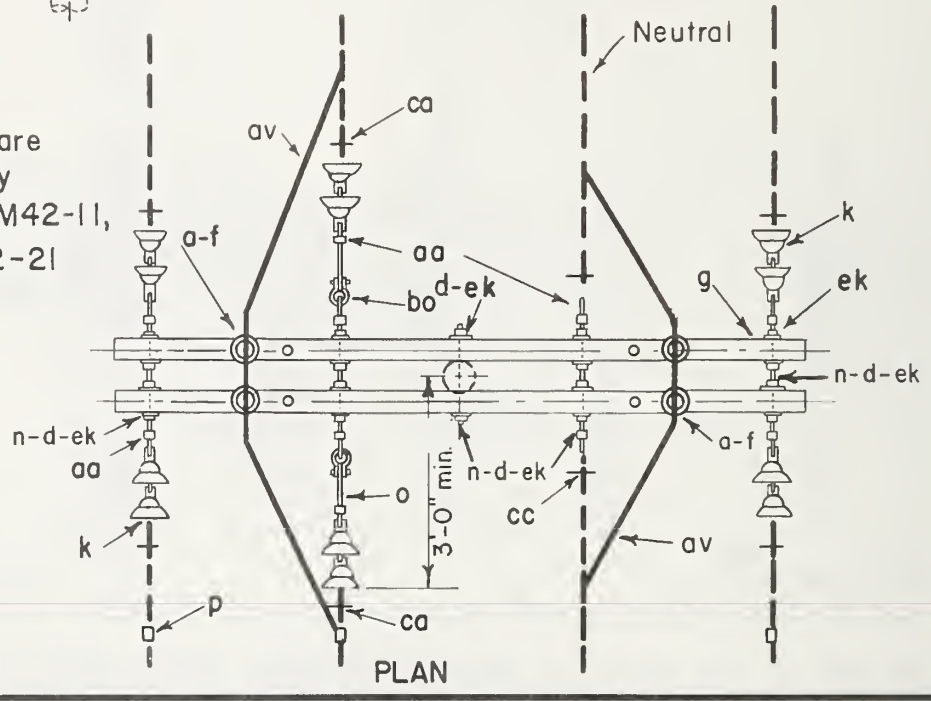
12.5/7.2 kV, 3-PHASE
CROSSARM CONSTRUCTION, DEADEND (DOUBLE)

Apr., 1983

C8



NOTE:
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13 and M42-21



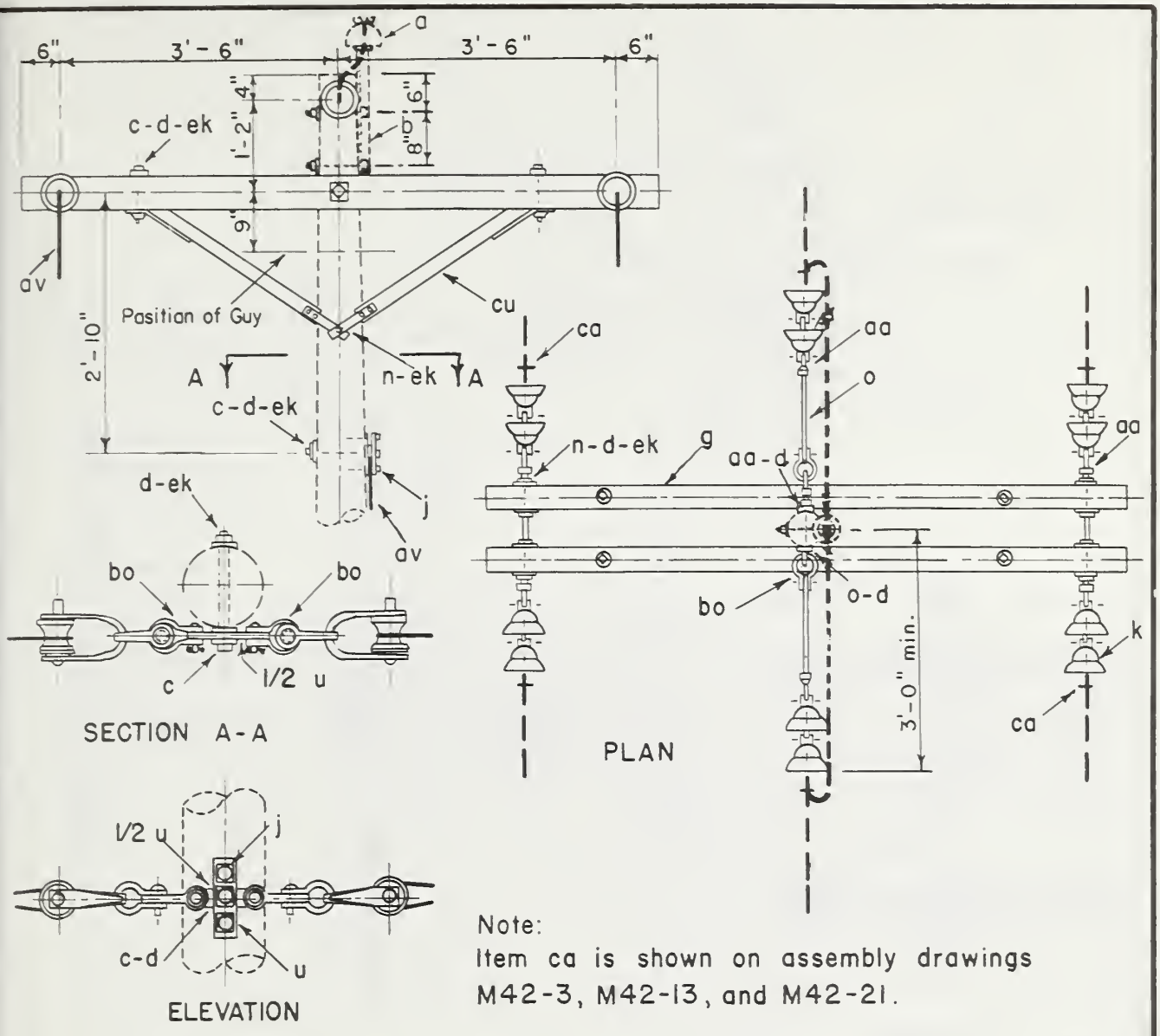
PLAN

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
			p		Connectors, as req'd.
a	4	Insulator, pin type	o	2	Bolt, eye, 5/8"x req'd. length
			aa	10	Nut, eye, 5/8"
c	4	Bolt, machine, 1/2"x req'd. length	av		Jumpers and leads as req'd.
d	18	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	bo	2	Shackle, anchor
d	4	Washer, round, 1 3/8" dia., 9/16" hole	ca	6	Deadend assembly, primary
f	4	Pin, crossarm, steel, 5/8"x 10 3/4"	cc	2	Deadend assembly, neutral
g	2	Crossarm, 3 5/8"x 4 5/8"x 10'-0"	cu	2	Brace, wood, 60" span
k	12	Insulator, suspension	ek		Lacknuts, as required
n	6	Bolt, dauble arming, 5/8"x req'd. length			

12.5/7.2 kV, 3-PHASE
CROSSARM CONSTRUCTION-DEADEND (DOUBLE)

Apr., 1983

C 8-1



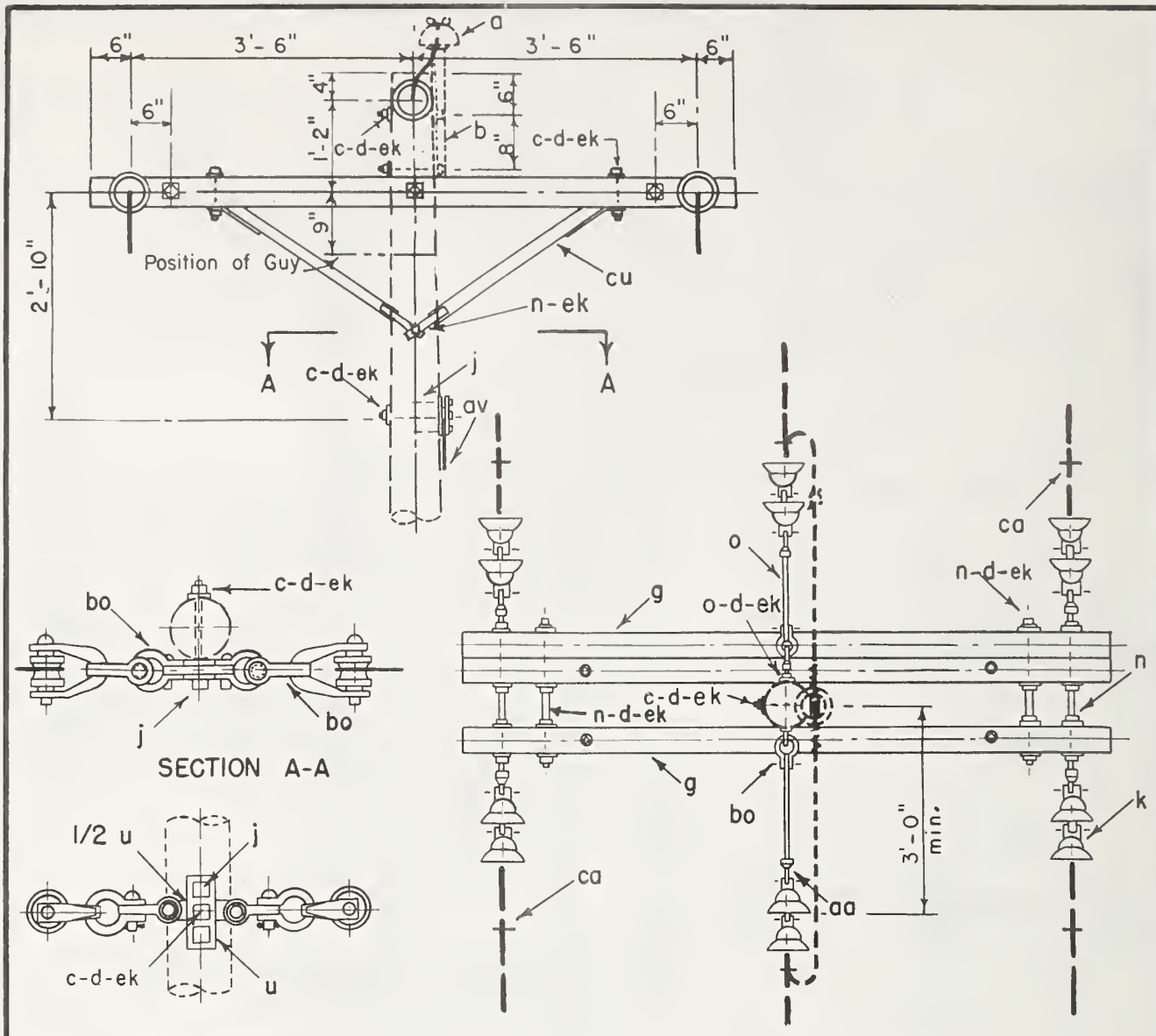
Note:
Item ca is shown on assembly drawings M42-3, M42-13, and M42-21.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
			a	3	Bolt, eye, 5/8" x req'd. length
c	1	Bolt, machine, 5/8" x req'd. length	p		Connectors, as req'd.
c	4	Bolt, machine, 1/2" x req'd. length	u	11/2	Clamp, guy, 6" heavy duty
d	13	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	aa	7	Nut, eye, 5/8"
d	4	Washer, rd., 1 3/8" dia., 9/16" hole	av		Jumpers
			bo	6	Shackle, anchor
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ca	6	Deadend assembly, primary
j	2	Screw, lag, 1/2" x 4"	cc	2	Deadend assembly, neutral
k	12	Insulator, suspension	cu	2	Brace, wood, 60" span
n	4	Bolt, double arming, 5/8" x req'd. length	ek		Locknuts

12.5/7.2 kV, 3-PHASE CROSSARM CONSTRUCTION-DEADEND (DOUBLE) (LARGE CONDUCTORS)

Apr., 1983

C8-2



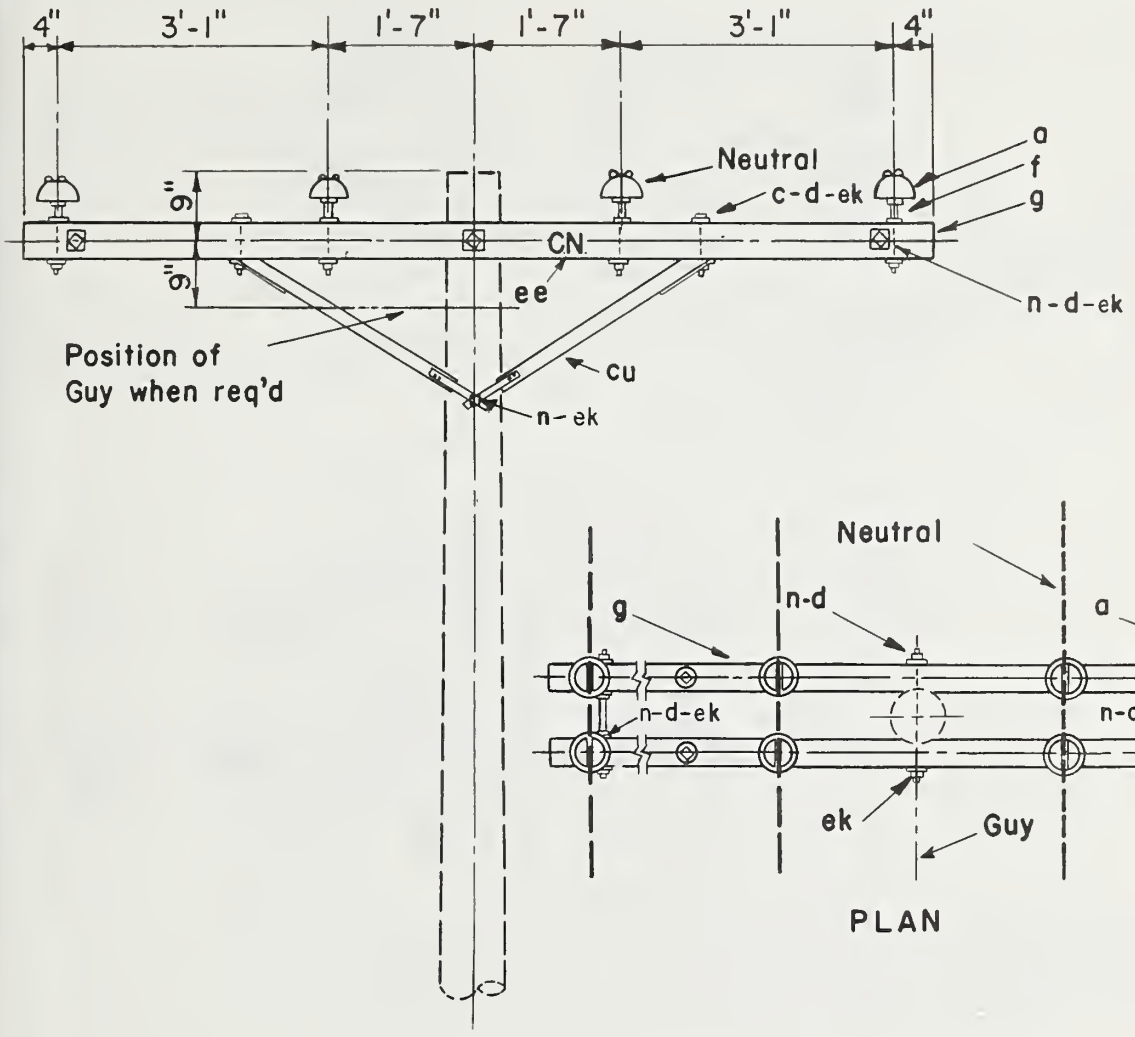
NOTE:
Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
			o	3	Bolt, eye, 5/8" x req'd. length
c	1	Bolt, machine, 5/8" x req'd. length	p		Connectors, as req'd.
c	4	Bolt, machine, 1/2" x req'd. length	u	1 1/2	Clamp, guy, 6" heavy duty
d	21	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	aa	7	Nut, eye, 5/8"
d	4	Washer, rd., 1 3/8" diom., 9/16" hole	av		Jumpers, as required
			bo	6	Shockle, anchor
g	3	Crossarm, 3 5/8" x 4 5/8" x 8' - 0"	ca	6	Deodend assembly, primory
j	2	Screw, lag, 1/2" x 4"	cc	2	Deodend assembly, neutrol
k	12	Insulator, suspension	cu	2	Brace, wood, 60" span
n	6	Bolt, double orming, 5/8" x req'd. length	ek		Locknuts, as required

12.5/7.2 kV,- 3 PHASE
CROSSARM CONSTRUCTION, DEADEND (DOUBLE)
LARGE CONDUCTORS WITH UNBALANCED LOADS

Apr., 1983

C8-3



PLAN

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
a	8	Insulator, pin type		f	8	Pin, crossarm, steel, $\frac{5}{8}$" x 10$\frac{3}{4}$"	
				g	2	Crossarm, 3$\frac{5}{8}$" x 4$\frac{5}{8}$" x 10'-0"	
				n	4	Bolt, double arming, $\frac{5}{8}$" x req'd length	
c	4	Bolt, machine, $\frac{1}{2}$" x req'd length		cu	2	Brace, wood, 60" span	
d	10	Washer, 2$\frac{1}{4}$" x 2$\frac{1}{4}$" x $\frac{3}{16}$", $\frac{13}{16}$" hole		ek		Locknuts , as required	
d	4	Washer, rd., 1$\frac{3}{8}$" dia., $\frac{9}{16}$" hole		ee	4	Letters, 2C, 2N, with 1" nails	

DESIGN LIMITS

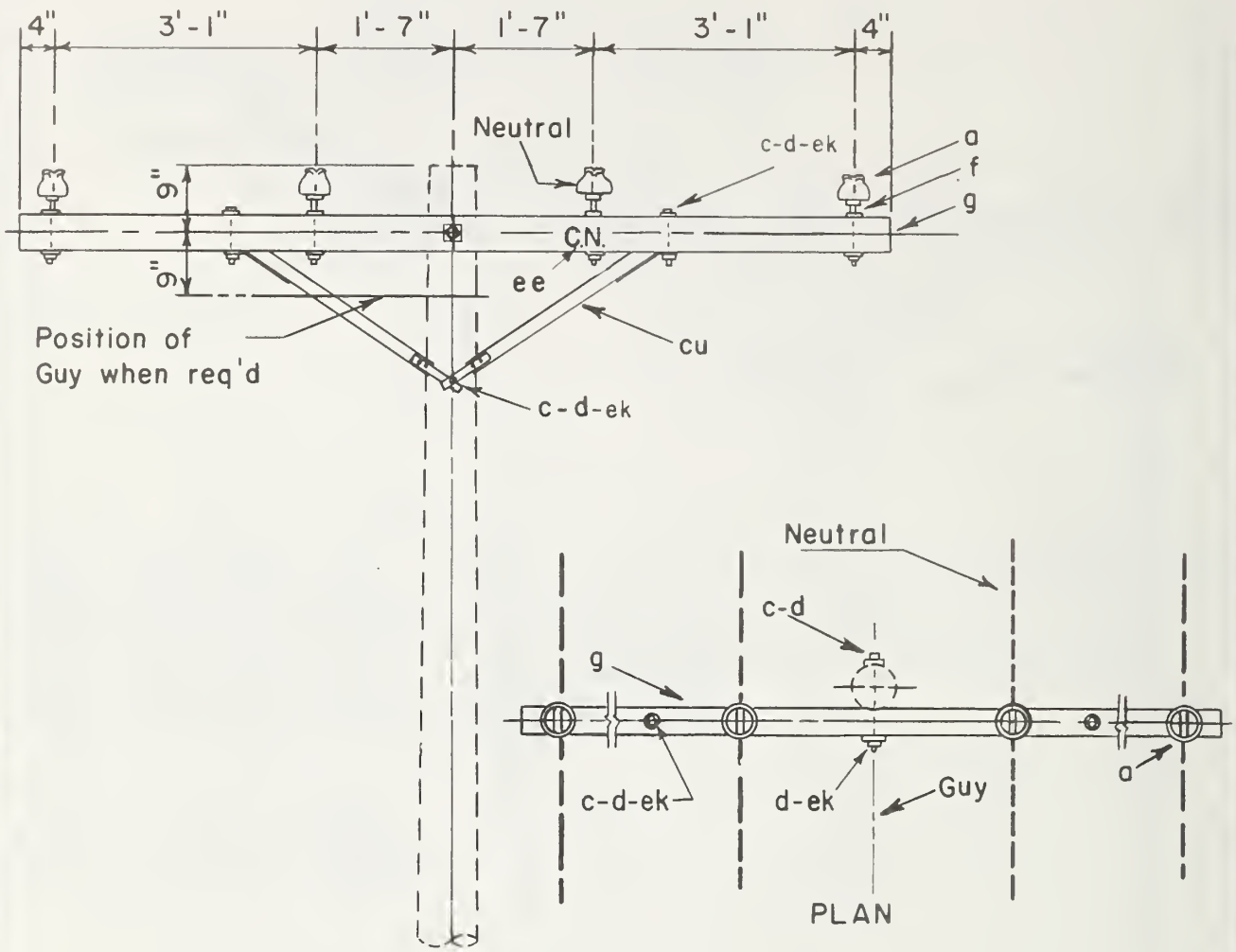
Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 20°

12.5/7.2 kV, 3-PHASE
CROSSARM CONSTRUCTION - DOUBLE LINE ARM

Apr., 1983

C9



ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
a	4	Insulator, pin type		d	2	Washer, round, 1 3/8" dia., 9/16" hole	
				f	4	Pin, crossarm, steel, 5/8" x 10 3/4"	
c	2	Bolt, machine, 5/8" x req'd length		g	1	Crossarm, 3 5/8" x 4 5/8" x 10'-0"	
c	2	Bolt, machine, 1/2" x req'd length		cu	1	Brace, wood, 60" span	
d	3	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		ek		Locknuts, as required	
ee	4	Letters, 2C, 2N, with 1" nails					

DESIGN LIMITS

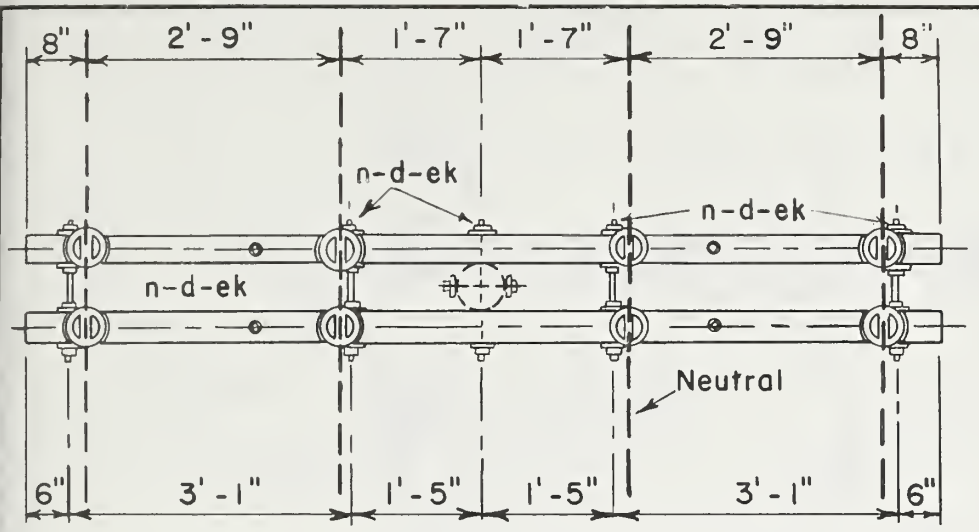
Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits: 5°

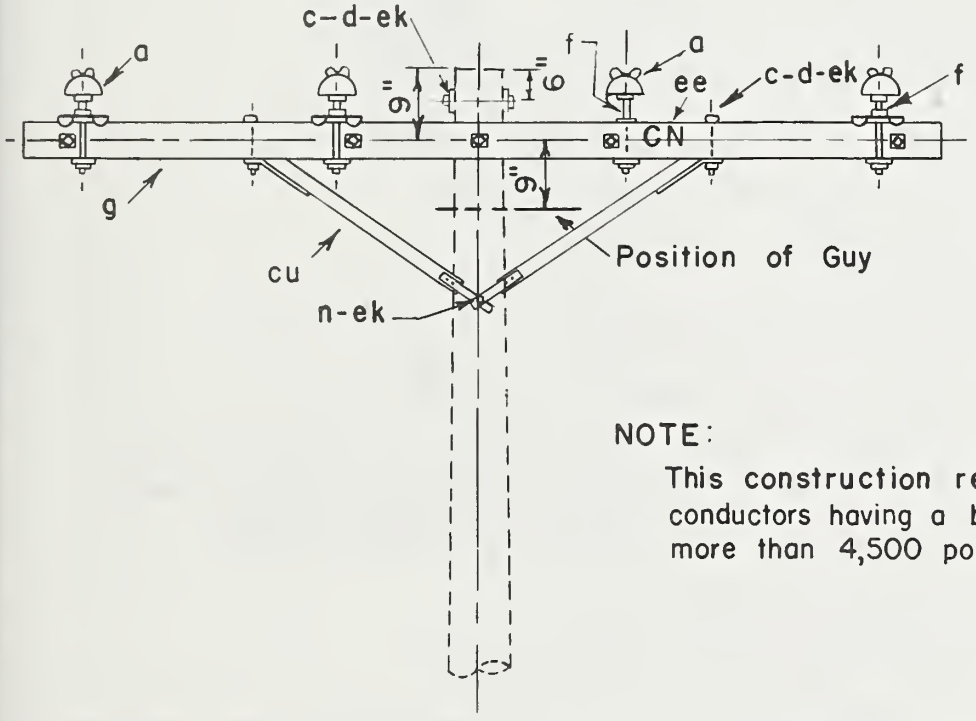
12.5/7.2 kV
3-PHASE CROSSARM CONSTR.
SINGLE LINE ARM

Apr., 1983

C9-1



PLAN



NOTE:

This construction required for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
a	8	Insulator, pin type		f	6	Pin, crossarm, steel, clamp type	
				g	2	Crossarm, $3\frac{5}{8}$" x $4\frac{5}{8}$" x 10'-0"	
c	1	Bolt, machine, 5/8" x req'd length		n	6	Bolt, double arming, $\frac{5}{8}$" x req'd l'gth	
c	4	Bolt, machine, $\frac{1}{2}$" x req'd length		cu	2	Brace, wood, 60" span	
d	20	Washer, $2\frac{1}{4}$" x $2\frac{1}{4}$" x $\frac{3}{16}$", $\frac{13}{16}$" hole		ek		Locknuts, as required	
d	4	Washer, rd. $1\frac{3}{8}$" diam., $\frac{9}{16}$" hole		ee	4	Letters 2C, 2N, with 1" nails	
f	2	Pin, crossarm, steel, $\frac{5}{8}$" x $10\frac{3}{4}$"					

DESIGN LIMITS

Max. transverse load: 2000 lbs. per conductor

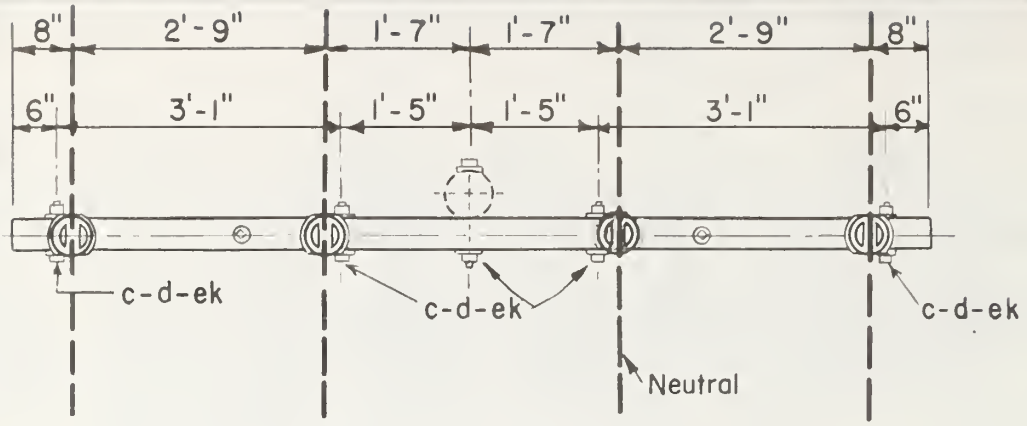
Max. line angle within load limits: 5°

12.5/7.2 kV

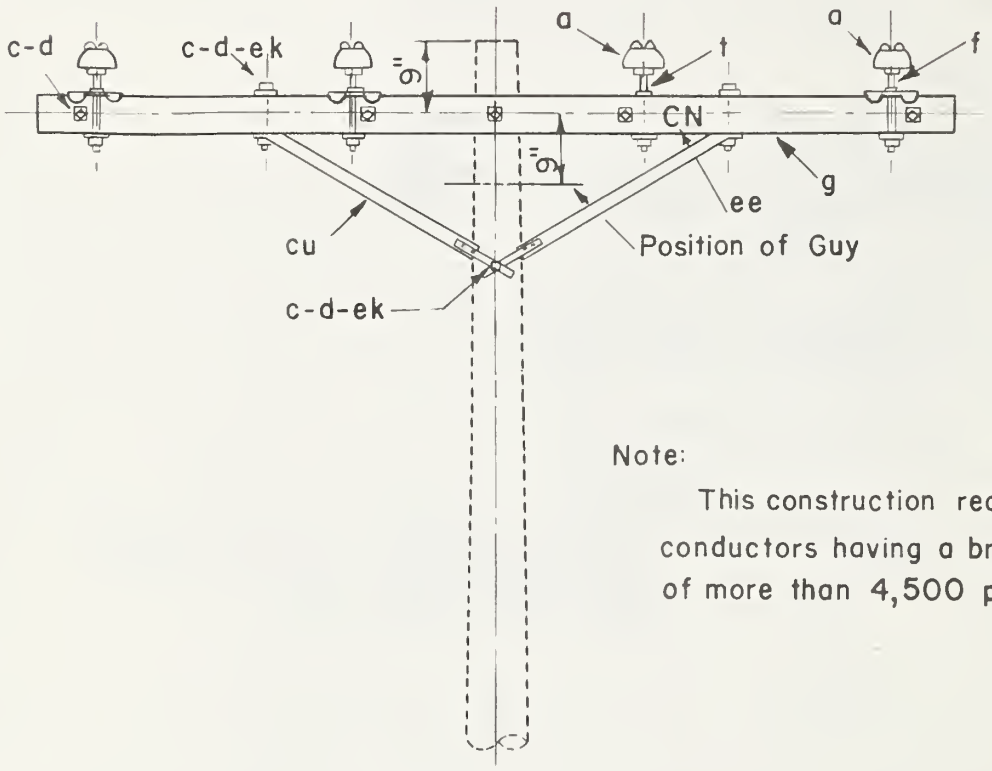
3-PHASE CROSSARM CONSTR. - DOUBLE LINE ARM ANGLE (LARGE CONDUCTORS)

Apr., 1983

C9-2



PLAN



ELEVATION

Note:

This construction required for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
a	4	Insulator, pin type		f	3	Pin, crossarm, steel, clamp type	
				g	1	Crossarm, $3\frac{5}{8}$" x $4\frac{5}{8}$" x 10'-0"	
c	6	Bolt, machine, $\frac{5}{8}$" x req'd length		f	1	Pin, crossarm, steel, $\frac{5}{8}$" x $10\frac{3}{4}$"	
c	2	Bolt, machine, $\frac{1}{2}$" x req'd length		cu	1	Broce, wood, 60" span	
d	11	Washer, $2\frac{1}{4}$" x $2\frac{1}{4}$" x $\frac{3}{16}$", $\frac{13}{16}$" hole		ek		Locknuts, as required	
d	2	Washer, rd., $1\frac{3}{8}$" diam., $\frac{9}{16}$" hole		ee	4	Letters, 2 "C", 2 "N" with 1" nails	

DESIGN LIMITS

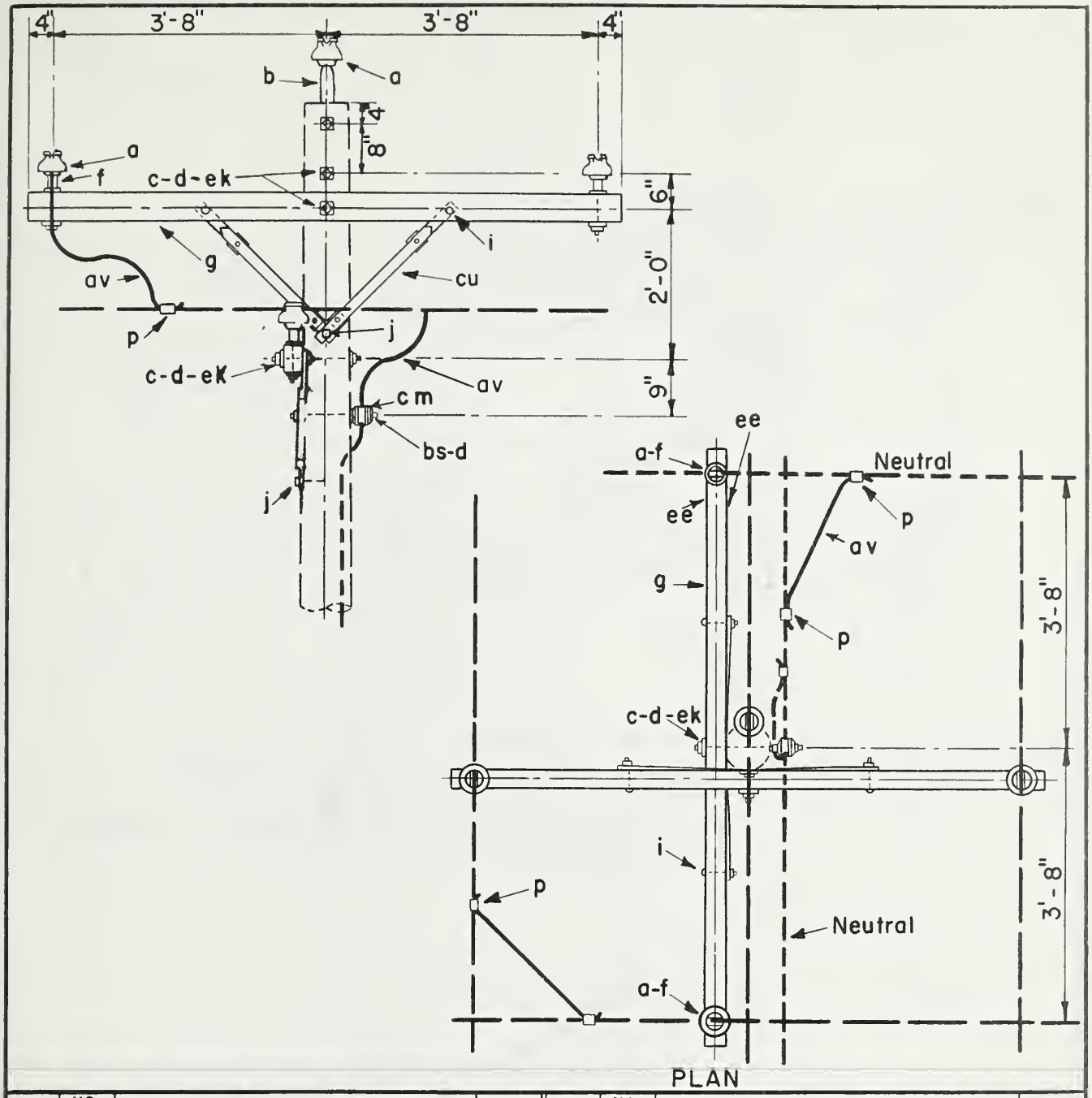
Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV 3-PHASE CROSSARM CONSTRUCTION - SINGLE LINE ARM (LARGE CONDUCTORS)

Apr., 1983

C9-3



ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
a	5	Insulator, pin type		i	4	Bolt, carriage, $\frac{3}{8}$" x $4\frac{1}{2}$"	
				j	2	Screw, lag, $\frac{1}{2}$" x 4"	
b	1	Pin, pole top, 20"		p		Connectors, as required	
c	4	Bolt, machine, $\frac{5}{8}$" x req'd length		av		Jumpers and leads as req'd	
d	7	Washer, $2\frac{1}{4}$" x $2\frac{1}{4}$" x $\frac{3}{16}$", $\frac{13}{16}$" hole		bs	1	Bolt, single upset,	
f	4	Pin, crossarm, steel, $\frac{5}{8}$" x $10\frac{1}{4}$"		ek		Locknuts, as required	
g	2	Crossarm, $3\frac{5}{8}$" x $4\frac{5}{8}$" x 8'-0"		ee	4	Letters, 2 "C", 2 "N", with 1" nails	
cu	4	Brace, wood, 28"		cm	1	spool insulator	

DESIGN LIMITS

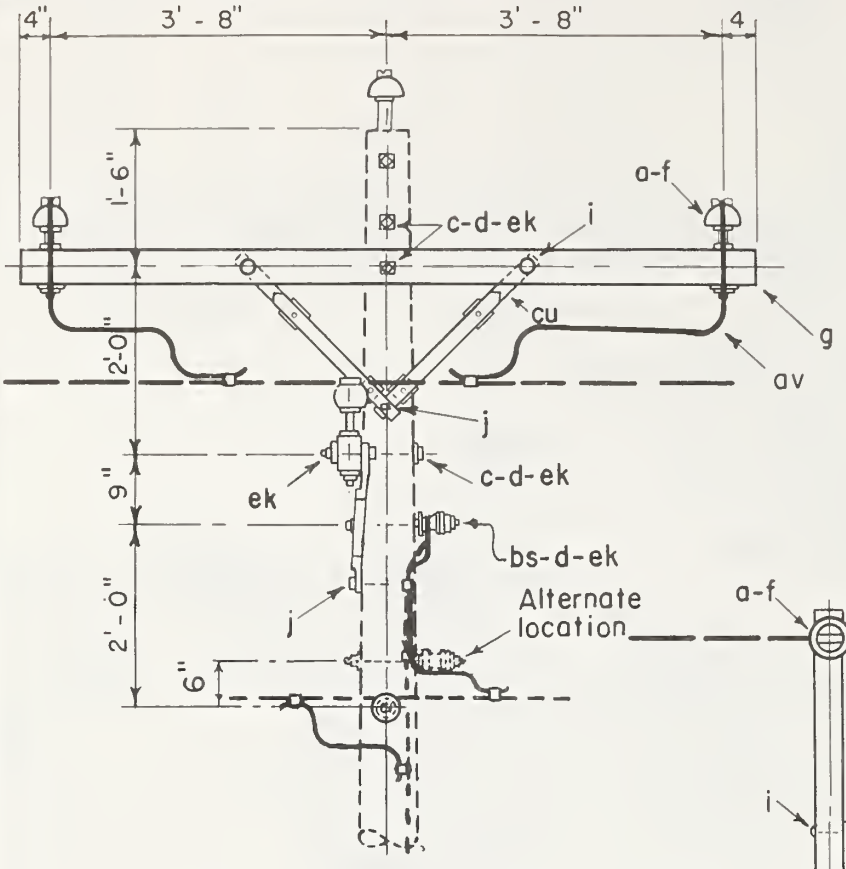
Max. transverse load: 500 lbs. per conductor

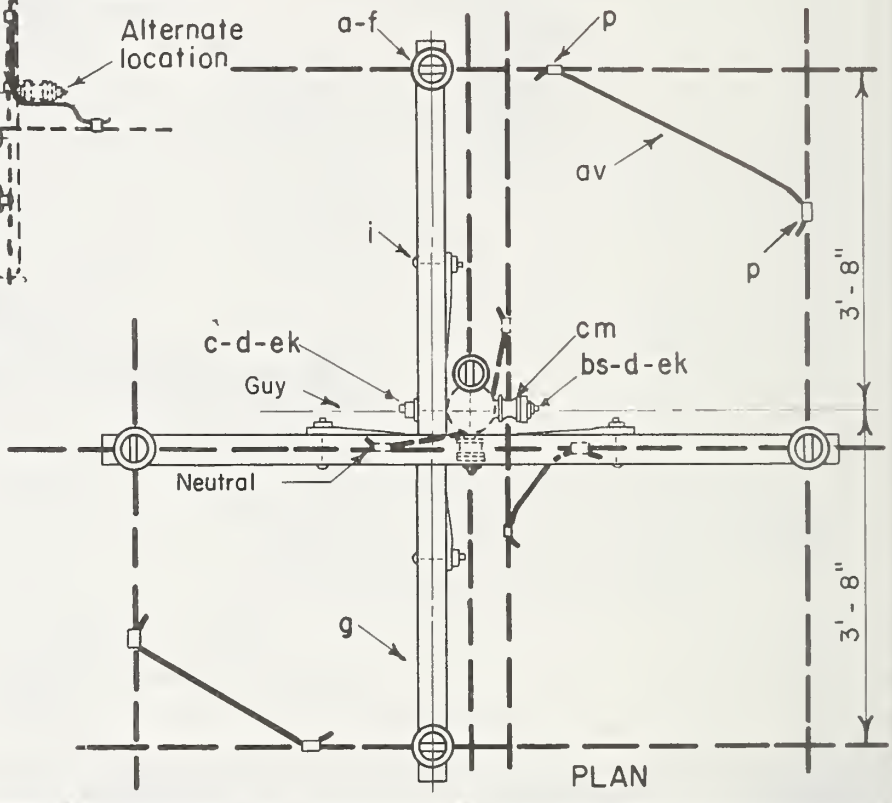
Max. line angle within load limits: 5°

12.5/7.2 kV
3-PHASE, CROSSARM CONSTRUCTION
SINGLE-PHASE JUNCTION

Apr., 1983

C22





ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	5	Insulator, pin type	i	4	Bolt, carriage, 3/8"x 4 1/2"
b	1	Pin, pole top, 20"	j	2	Screw, lag, 1/2" x 4"
c	4	Bolt, machine, 5/8" x req'd. length	p		Connectors, as req'd.
d	8	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	av		Jumpers
f	4	Pin, crossarm, steel, 5/8" x 10 3/4"	bs	2	Bolt, single upset
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ek		Locknuts, as required
cu	4	Brace, wood, 28"	cm	2	spool insulator

DESIGN LIMITS

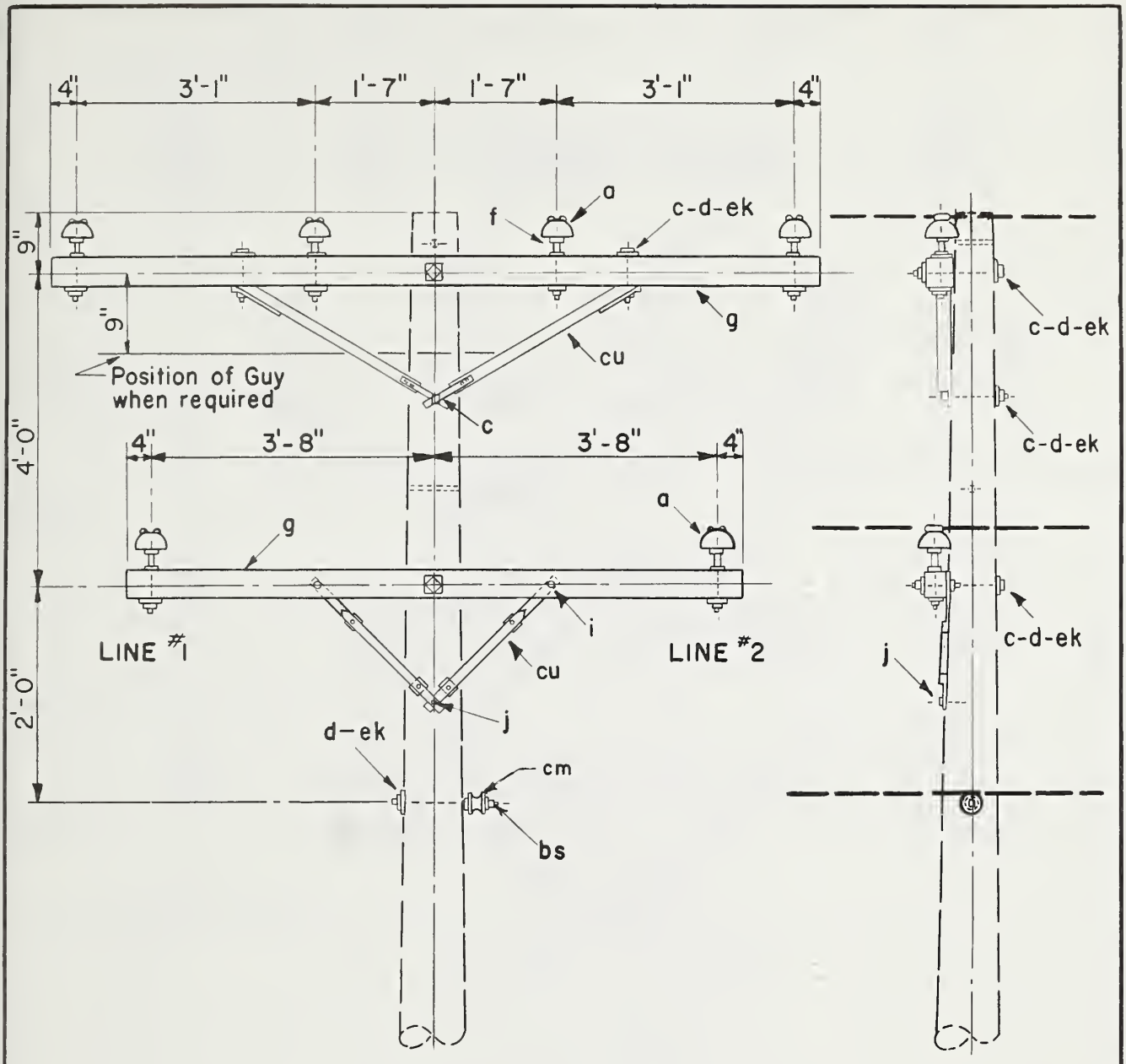
Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV
3-PHASE, CROSSARM CONSTRUCTION
TWO PHASE JUNCTION

Apr., 1983

C24



ITEM	NO. REQ'D	MATERIAL
a	6	Insulator, pin type
c	3	Bolt, machine, $\frac{5}{8}$" x req'd length
c	2	Bolt, machine, $\frac{1}{2}$" x req'd length
d	6	Washer, 2$\frac{1}{4}$" x 2$\frac{1}{4}$" x $\frac{3}{16}$", $\frac{13}{16}$" hole
d	2	Washer, rd., 1$\frac{3}{8}$" diam., $\frac{9}{16}$" hole
f	6	Pin, crossarm, steel, $\frac{5}{8}$" x 10$\frac{3}{4}$"
g	1	Crossarm, 3$\frac{5}{8}$" x 4$\frac{5}{8}$" x 10'-0"
cm	1	Spool insulator

ITEM	NO. REQ'D	MATERIAL
g	1	Crossarm, 3 $\frac{5}{8}$" x 4 $\frac{5}{8}$" x 8'-0"
cu	2	Brace, wood, 28"
i	2	Bolt, carriage, $\frac{3}{8}$" x 4$\frac{1}{2}$"
j	1	Screw, lag, $\frac{1}{2}$" x 4"
b s	1	Bolt, single upset
c u	1	Brace, wood, 60" span
e k		Locknuts, as required

DESIGN LIMITS

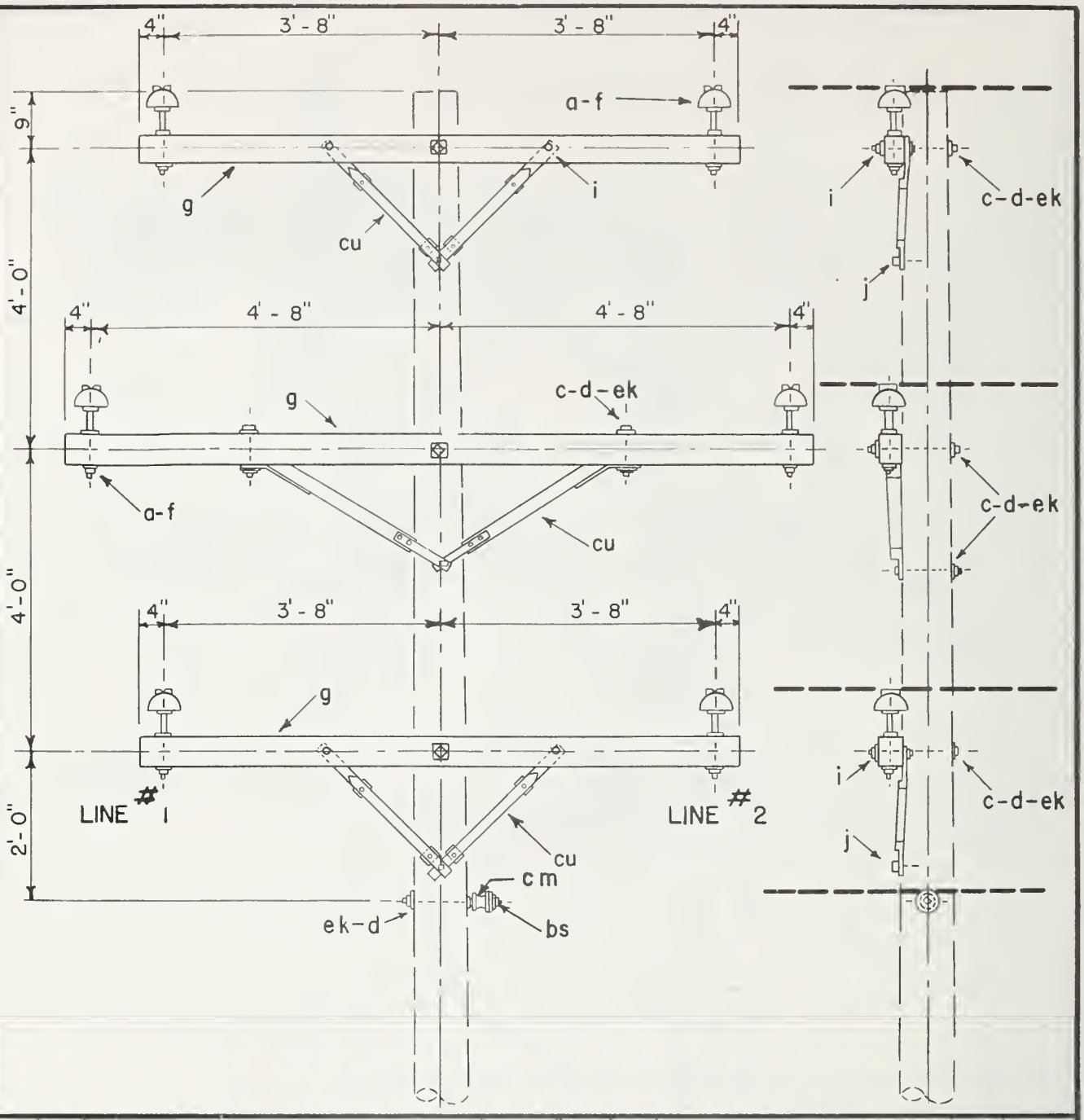
Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV. 3-PHASE
CROSSARM CONSTRUCTION - DOUBLE CIRCUIT
SINGLE PRIMARY SUPPORT, 2 CROSSARM TYPE

Apr., 1983

DC-C1



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	6	Insulator, pin type	g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"
c	4	Bolt, machine, 5/8" x req'd. length	cu	4	Brace, wood, 28"
c	2	Bolt, machine, 1/2" x req'd. length	i	4	Bolt, carriage, 3/8" x 4 1/2"
d	8	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	j	2	Screw, lag, 1/2" x 4"
d	2	Washer, round, 1 3/8" diam., 9/16" hole	bs	1	Bolt, single upset
f	6	Pin, crossarm, steel, 5/8" x 10 3/4"	cu	1	Brace, wood, 60" span
g	1	Crossarm, 3 5/8" x 4 5/8" x 10'-0"	ek		Locknuts, as required
cm	1	Spool insulator			

DESIGN LIMITS

Max. transverse load 500 lbs. per conductor

Max. line angle within load limits: 5°

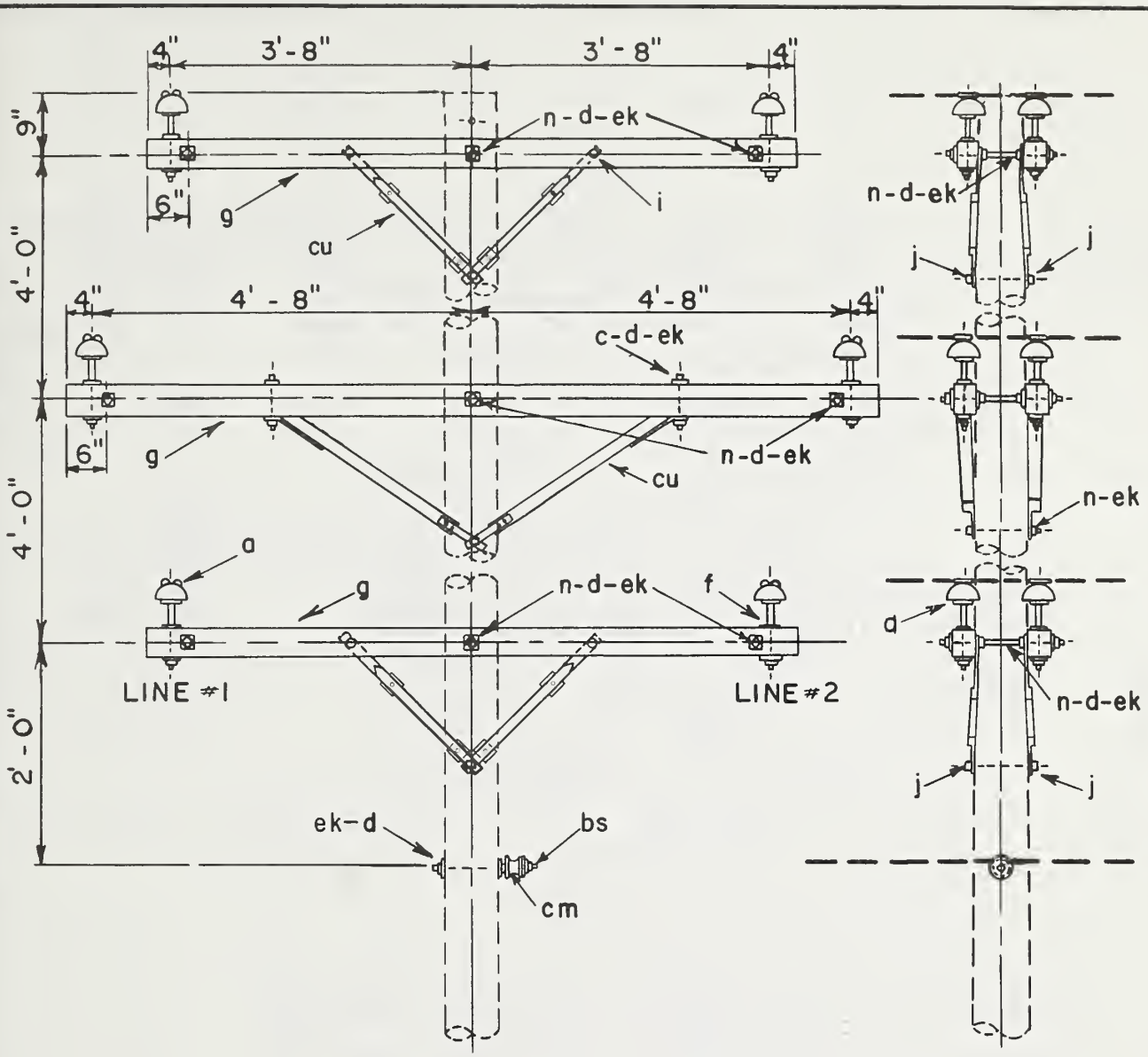
12.5/7.2 kV 3-PHASE

CROSSARM CONSTRUCTION-DOUBLE CIRCUIT

SINGLE PRIMARY SUPPORT 3 CROSSARM TYPE

Apr., 1983

DC-CIA



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	12	Insulator, pin type	g	4	Crossarm, 3 5/8" x 4 5/8" x 8'-0"
			cu	8	Brace, wood, 28"
c	4	Bolt, machine, 1/2" x req'd length	i	8	Bolt, carriage, 3/8" x 4 1/2"
d	31	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	j	4	Screw, lag, 1/2" x 4"
d	4	Washer, round, 1 3/8" diam., 9/16" hole	n	10	Bolt, double arming, 5/8" x req'd l'gth
f	12	Pin, crossarm, steel, 5/8" x 10 3/4"	bs	1	Bolt, single upset
g	2	Crossarm, 3 5/8" x 4 5/8" x 10'-0"	cu	2	Brace, wood, 60" span
cm	1	Spool insulator	ek		Locknuts, as required

DESIGN LIMITS

Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 5°

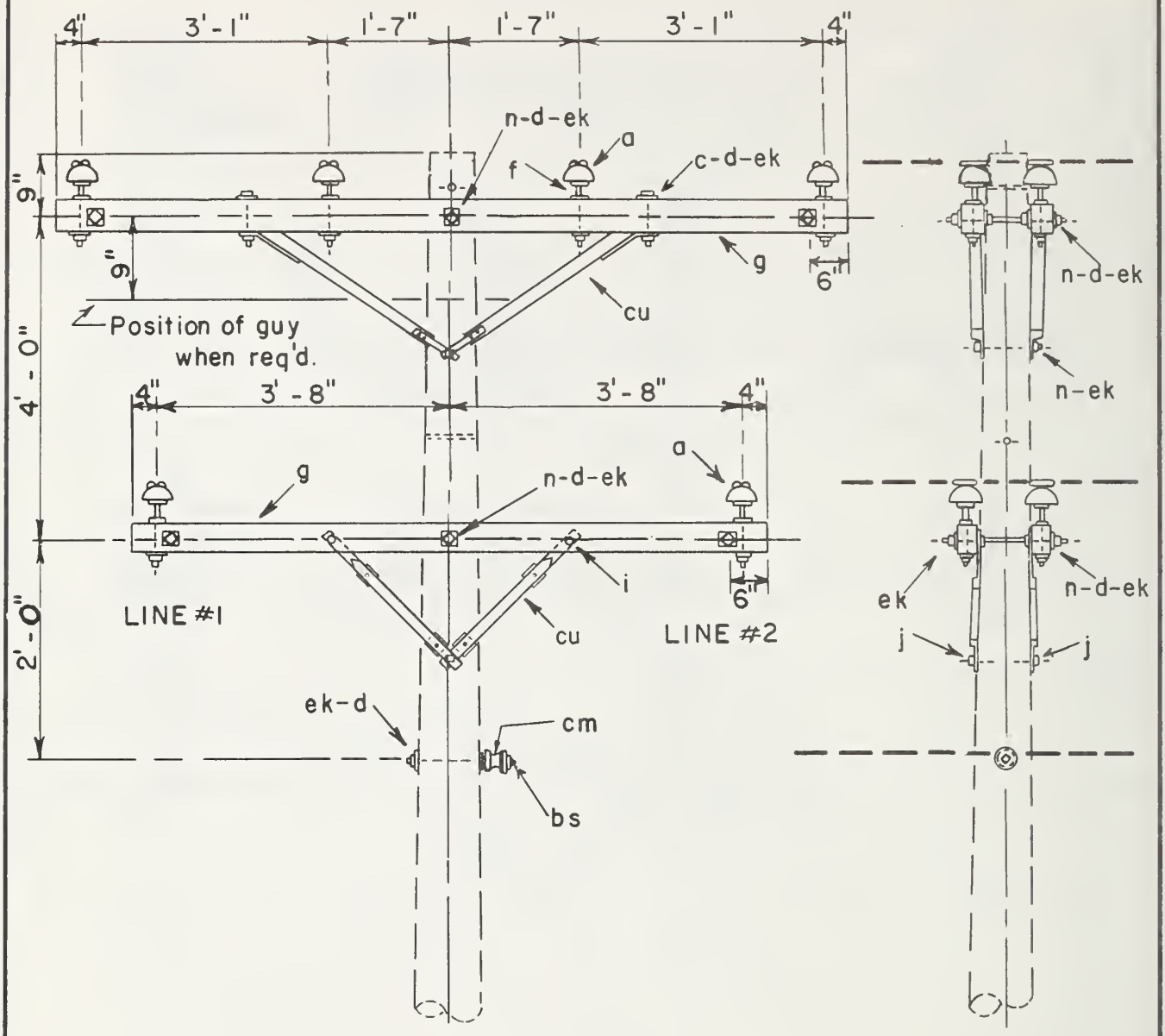
12.5/7.2 kV

3-PHASE CROSSARM CONSTR.-DOUBLE CIRCUIT

DOUBLE PRIMARY SUPPORT 3 CROSSARM TYPE

Apr., 1983

DC-CI-IA



ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
a	12	Insulator, pin type		cu	4	Brace, wood, 28"	
				i	4	Bolt, carriage, 3/8" x 4 1/2"	
c	4	Bolt, machine, 1/2" x req'd length		j	2	Screw, lag, 1/2" x 4"	
d	21	Washer, 2 1/4" x 2 1/4" x 3/16, 13/16" hole		n	7	Bolt, double arming, 5/8" x req'd l'gth	
d	4	Washer, 1 3/8" diam., 9/16" hole		bs	1	Bolt, single upset	
f	12	Pin, crossarm, steel, 5/8" x 10 3/4"		cu	2	Brace, wood, 60" span	
g	2	Crossarm, 3 5/8" x 4 5/8" x 10'-0"		ek		Locknuts, as required	
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"		cm	1	Spool insulator	

DESIGN LIMITS

Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 5°

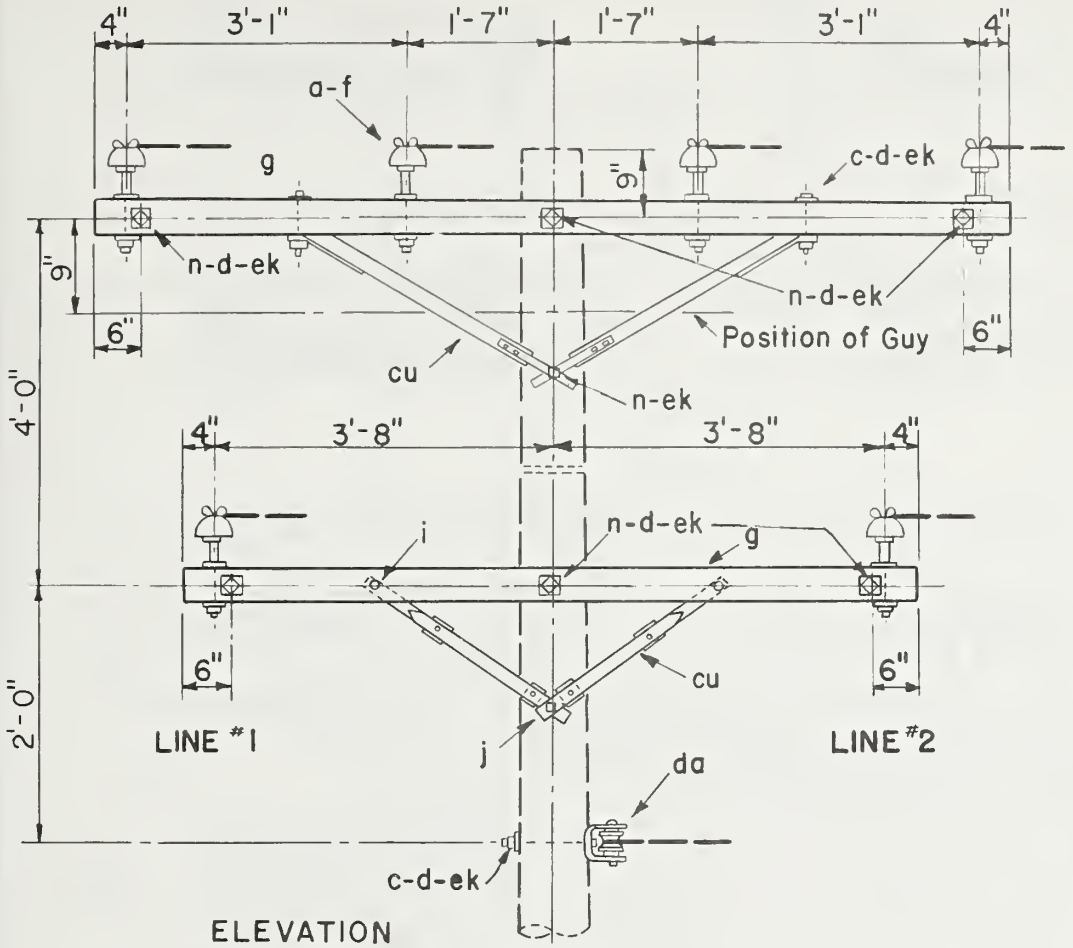
12.5/7.2 kV

3-PHASE CROSSARM CONSTR.-DOUBLE CIRCUIT

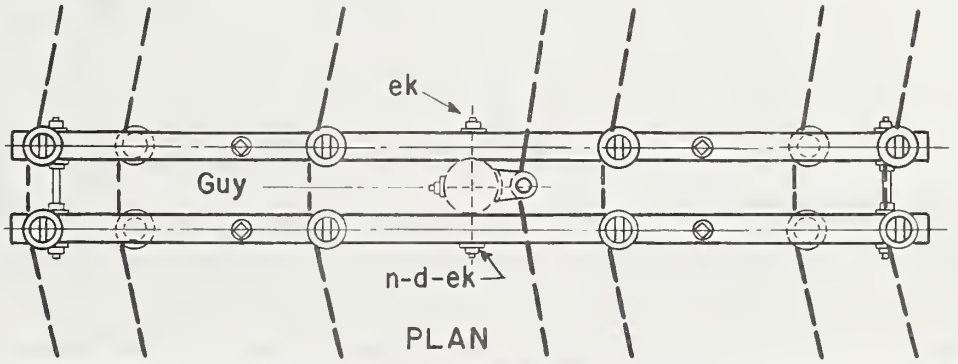
DOUBLE PRIMARY SUPPORT 2 CROSSARM TYPE

Apr., 1983

DC-C2



ELEVATION



PLAN

ITEM	NO. REQ'D	MATERIAL	ITEM	NO. REQ'D	MATERIAL
a	12	Insulator, pin type	cu	4	Brace, wood, 28"
c	1	Bolt, machine, 5/8" x req'd length	i	4	Bolt, carriage, 3/8" x 4 1/2"
c	4	Bolt, machine, 1/2" x req'd length	j	2	Screw, lag, 1/2" x 4"
d	21	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	n	7	Bolt, double arming, 5/8" x req'd length
d	4	Washer, round 1 3/8" dia., 9/16" hole	cu	2	Brace, wood, 60" span
f	12	Pin, crossarm, steel, 5/8" x 10 3/4"	da	1	Bracket, insulated
g	2	Crossarm, 3 5/8" x 4 5/8" x 10'-0"	ek		Locknuts, as required
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"			

DESIGN LIMITS

Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 20°

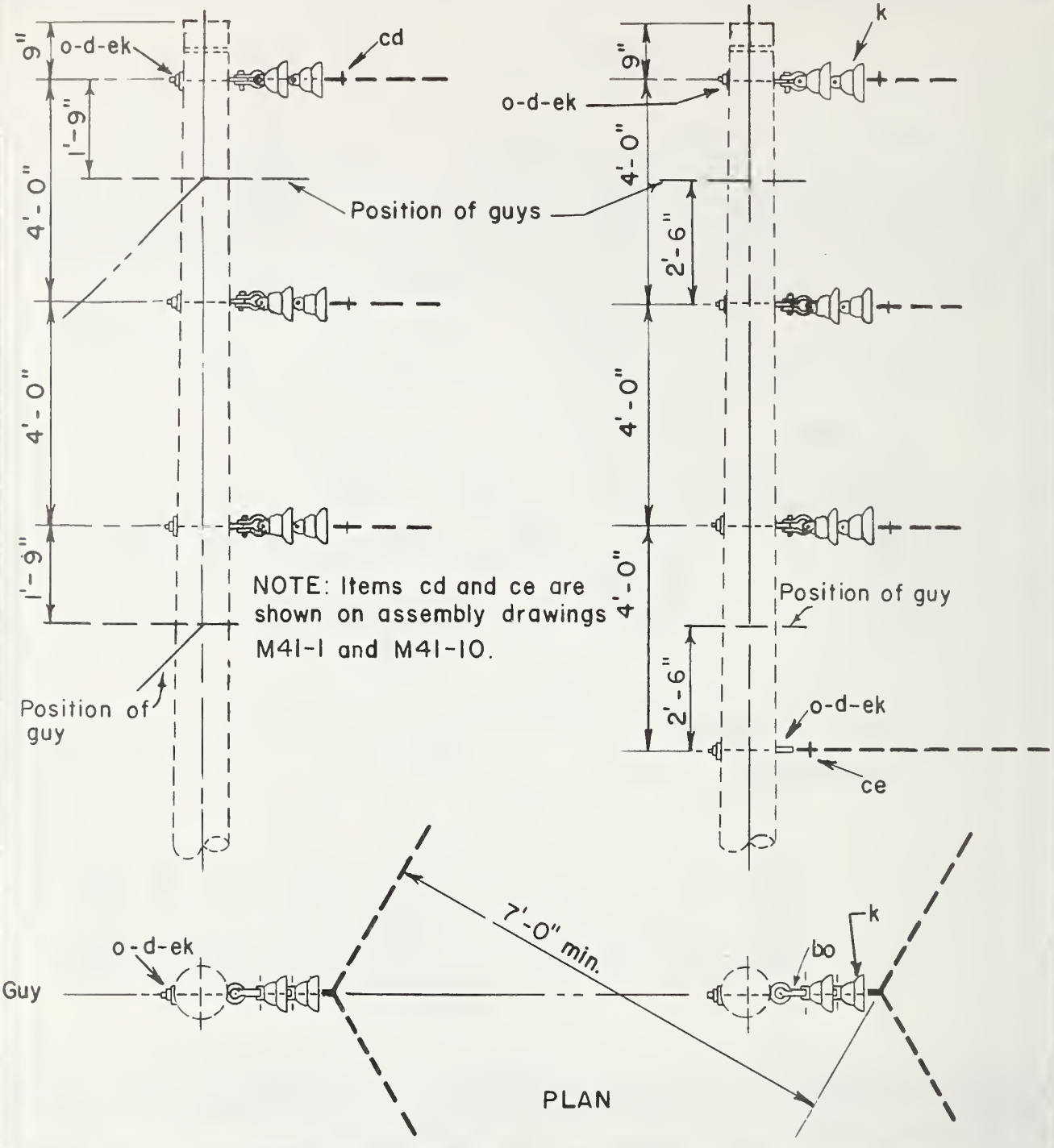
12.5/7.2 kV

3-PHASE, DOUBLE CIRCUIT

CROSSARM CONSTRUCTION 2 CROSSARM TYPE

Apr., 1983

DC-C2-1



ITEM	NO	MATERIAL		ITEM	NO.	MATERIAL	
d	7	Washer, 2¼" x 2¼" x 3/16", 13/16" hole		bo	6	Shackle, anchor	
k	12	Insulator, suspension		cd	6	Angle assembly, primary	
o	7	Bolt, eye, 5/8" x req'd length		ce	1	Angle assembly, neutral	
				ek		Locknuts, as required	

DESIGN LIMITS

Max. transverse load: 4000 lbs. per conductor

Angle 20°-60°

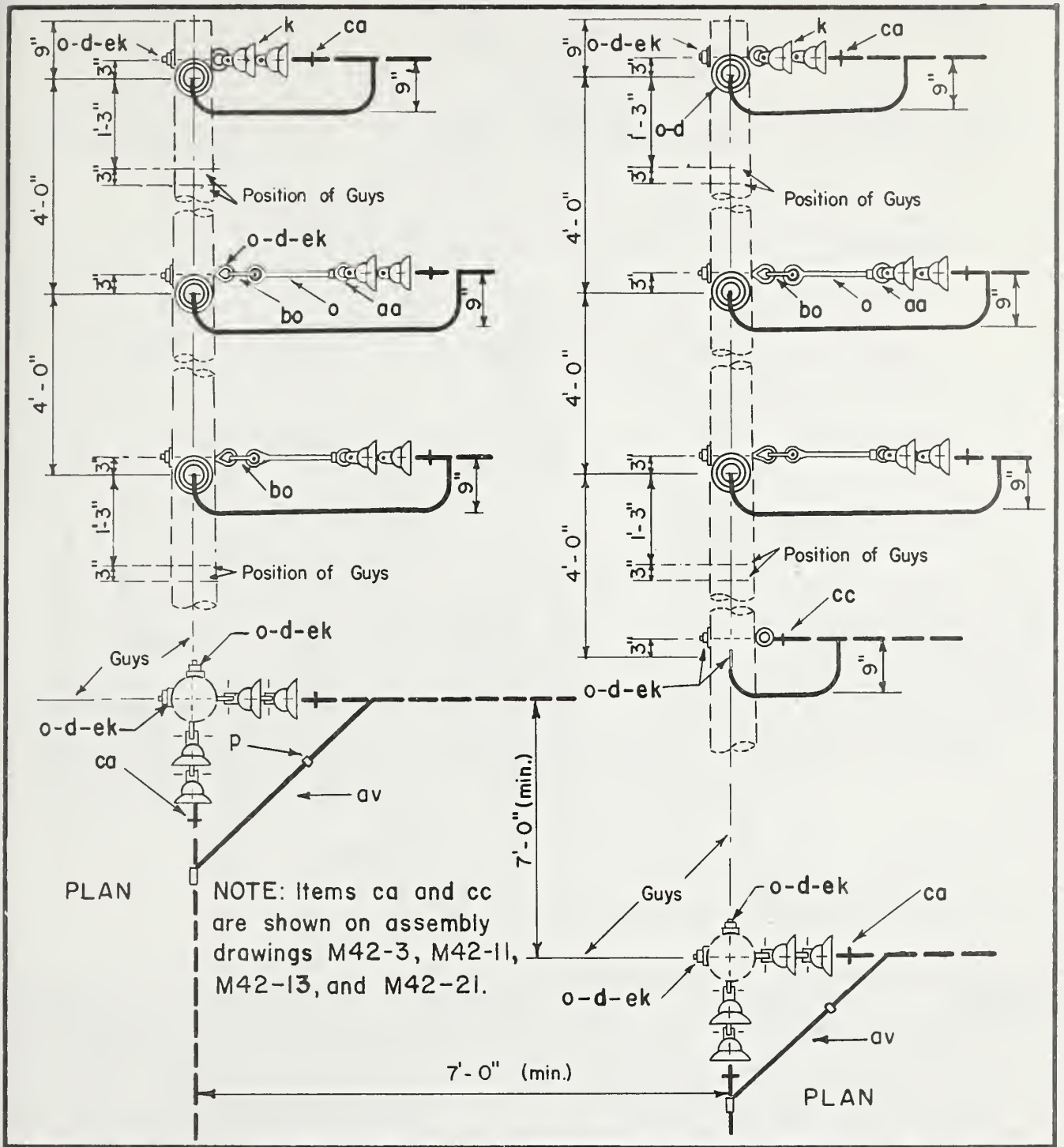
12.5/7.2 kV.

3-PHASE, DOUBLE CIRCUIT

VERTICAL CONSTRUCTION

Apr., 1983

DC-C3



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
d	14	Washers, 2 1/4"x 2 1/4"x 3/16, 13/16" hole	av		Jumpers, as required
k	24	Insulator, suspension	bo	8	Shackle, anchor
o	22	Bolt, eye, 5/8" x req'd. length	ca	12	Deadend assembly, primary
p		Connectors, as req'd.	cc	2	Deadend assembly, neutral
aa	8	Nut, eye, 5/8"	ek		Locknuts, as required

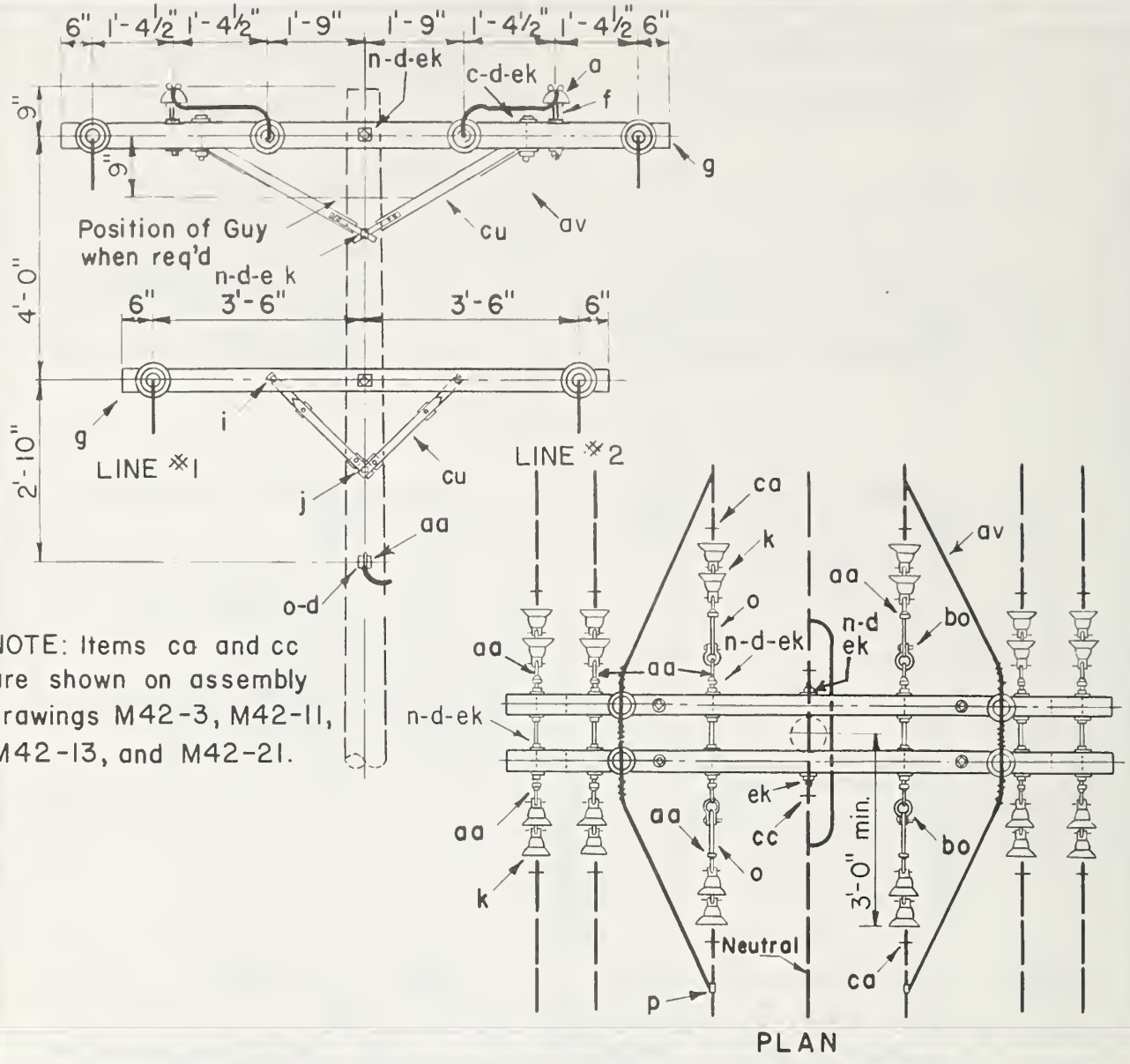
Angle: 60°–90°

12.5 / 7.2 kV

3-PHASE, DOUBLE CIRCUIT, VERTICAL CONSTRUCTION

Apr., 1983

DC-C4-1



NOTE: Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

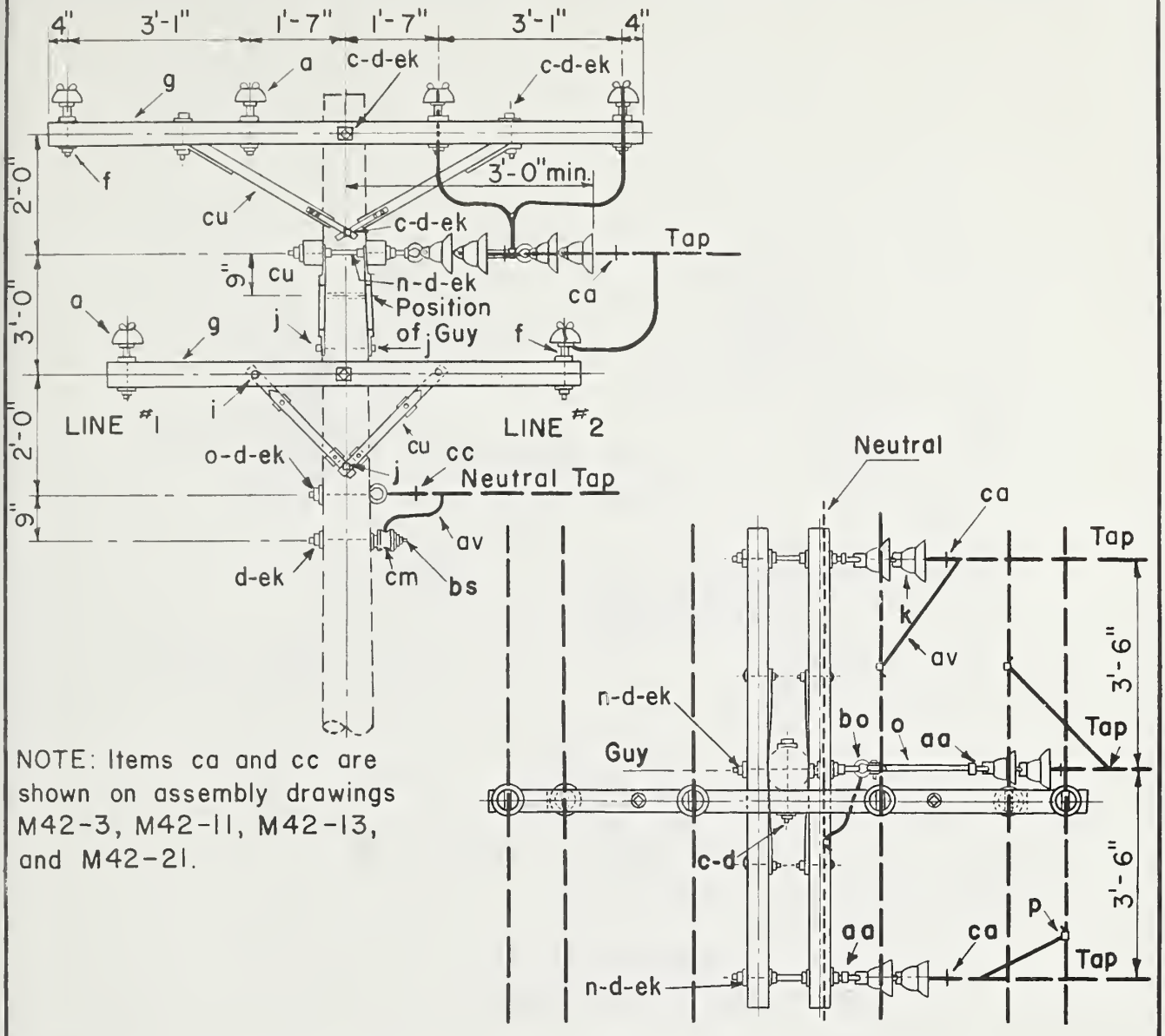
PLAN

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
g	4	Insulator, pin type		k	24	Insulator, suspension	
				n	9	Bolt, double arming, 5/8" x req'd length	
c	4	Bolt, machine, 1/2" x req'd length		o	5	Bolt, eye, 5/8" x req'd length	
o	30	Washer, 2¼" x 2¼" x 3/16", 13/16 hole		o		Connectors, as required	
d	4	Washer, rd., 1⅜" diam., 9/16" hole		aa	17	Nut, eye	
f	4	Pin, crossarm, steel, 1⅝" x 10¾"		av		Jumpers, as required	
g	2	Crossarm, 3⅝" x 4⅝" x 10'-0"		bo	4	Shackle, anchor	
g	2	Crossarm, 3⅝" x 4⅝" x 8'-0"		ca	12	Deadend assembly, primary	
cu	4	Brace, wood, 28"		cc	2	Deadend assembly, neutral	
i	4	Bolt, carriage, 3/8" x 4½"		cu	2	Brace, wood, 60" span	
j	2	Screw, lag, 1/2" x 4½"		ek		Locknuts as required	

12.5/7.2 kV.
3-PHASE, CROSSARM CONSTRUCTION
DOUBLE CIRCUIT - DEADEND (DOUBLE)

Apr., 1983

DC-C8



NOTE: Items ca and cc are shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

PLAN

ITEM	NO. REQ'D	MATERIAL
a	6	Insulator, pin type
c	3	Bolt, machine, 5/8" x req'd length
c	2	Bolt, machine, 1/2" x req'd length
d	17	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
d	2	Washer, rd., 1 3/8" dia., 9/16" hole
f	6	Pin, steel, crossarm, 5/8" x 10 3/4"
g	1	Crossarm, 3 5/8" x 4 5/8" x 10'-0"
g	3	Crossarm, 3 5/8" x 4 5/8" x 8'-0"
cu	6	Brace, wood, 28"
i	6	Bolt, carriage, 3/8" x 4 1/2"
j	3	Screw, lag, 1/2" x 4"
ek		Locknuts, as required
cm	1	Spool insulator

ITEM	NO. REQ'D	MATERIAL
k	6	Insulator, suspension
n	3	Bolt, double arming, 5/8" x req'd length
o	2	Bolt, eye, 5/8" x req'd length
p		Connectors as required
aa	4	Nut, eye, 5/8"
av		Jumpers or leads as re
bo	1	Shackle, anchor
bs	1	Bolt, single upset
ca	3	Deadend assembly, primary
cc	1	Deadend assembly, neutral
cu	1	Brace, wood, 60" span

DESIGN LIMITS

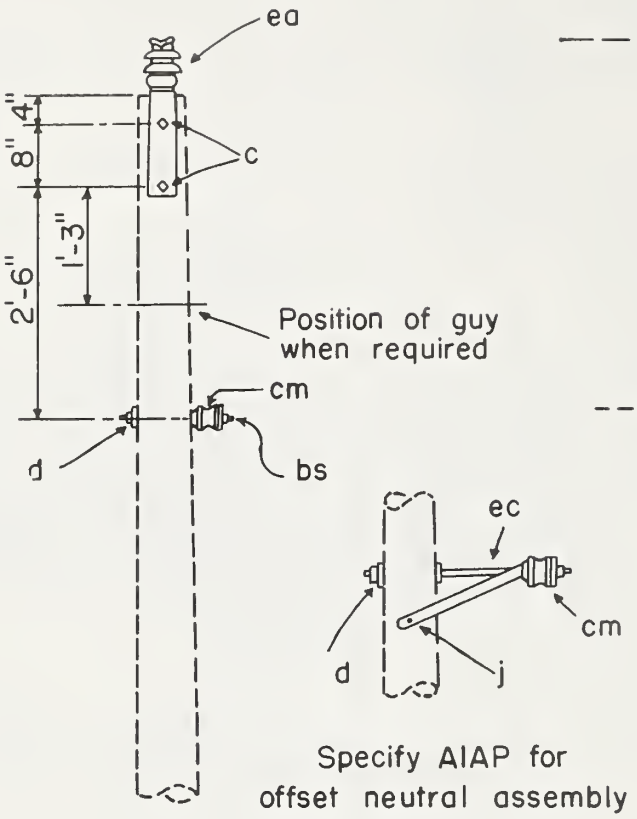
Max. transverse load: 500 lbs per conductor

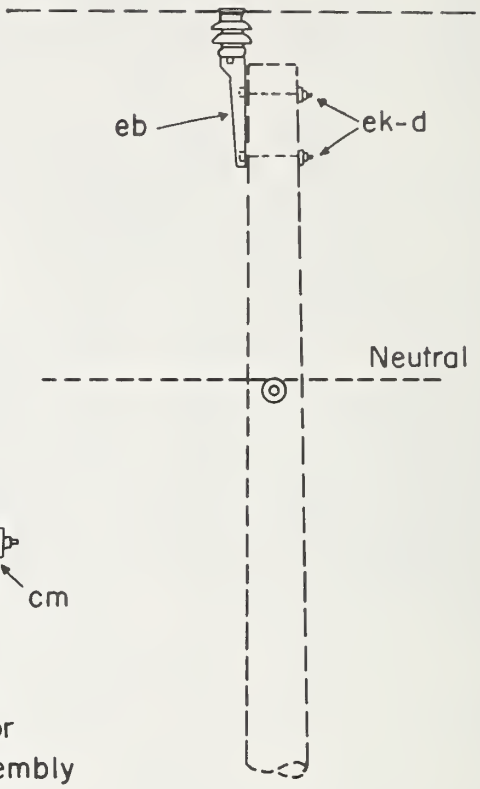
Max. line angle within load limits: 5°

12.5/7.2 kV. 3-PHASE CROSSARM CONSTRUCTION-DOUBLE CIRCUIT 3-PHASE TAP

Apr., 1983

DC-C25





ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	2	Bolt, machine, 5/8" x required length	ec	1	Bracket, offset, neutral (AIAP only)
d	3	Washer, square, 2 1/4"	ek		Locknuts, as required
bs	1	Bolt, single upset (AIP only)	j	2	Screw, lag, 1/2" x 4" (AIAP only)
ea	1	Insulator, post type	cm	1	Spool insulator
eb	1	Bracket, pole top			

DESIGN LIMITS

Max. transverse load: 750 lbs. per conductor

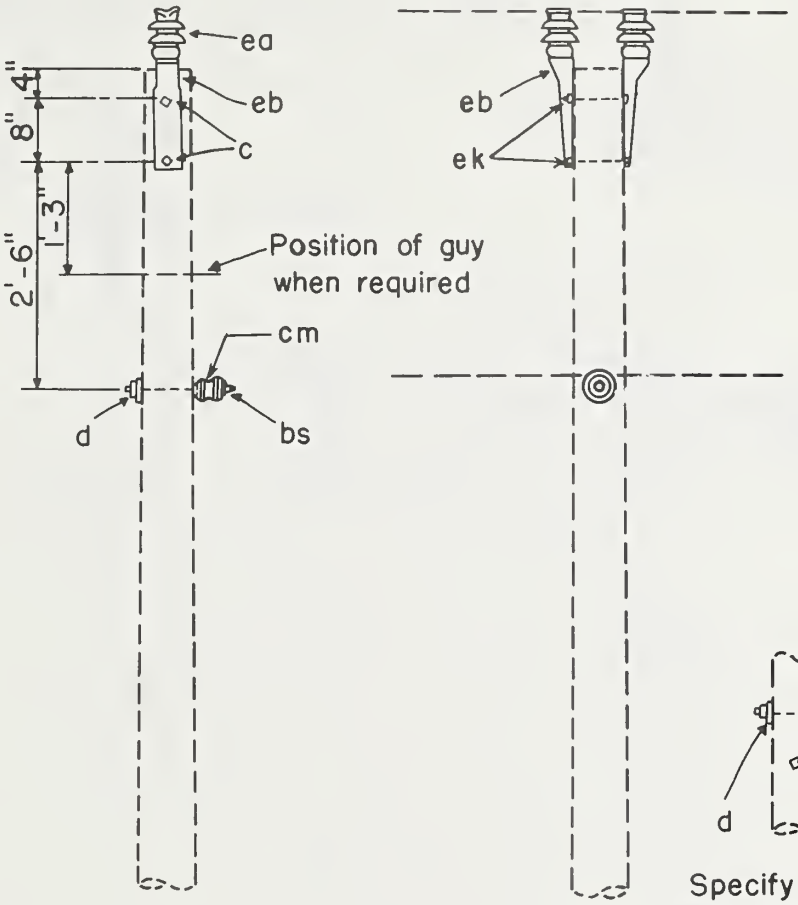
Max. line angle within load limits: 5°

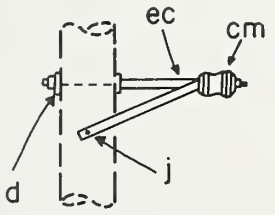
12.5/7.2 kV 1-PHASE

SINGLE PRIMARY SUPPORT

Apr., 1983

AIP, AIAP





Specify AI-IAP for offset neutral assembly

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
d	1	Washer, square, 2 1/4"	eb	2	Bracket, pole top
c	2	Bolt, machine, 5/8" x required length	ek		Locknuts
bs	1	Bolt, single upset (AI-IP only)	ec	1	Bracket, offset, neutral (AI-IAP only)
ea	2	Insulator, post type	j	2	Screw, lag, 1/2" x 4" (AI-IAP only)
cm	1	Spool insulator			

DESIGN LIMITS

Max. transverse load: 750 lbs. per conductor

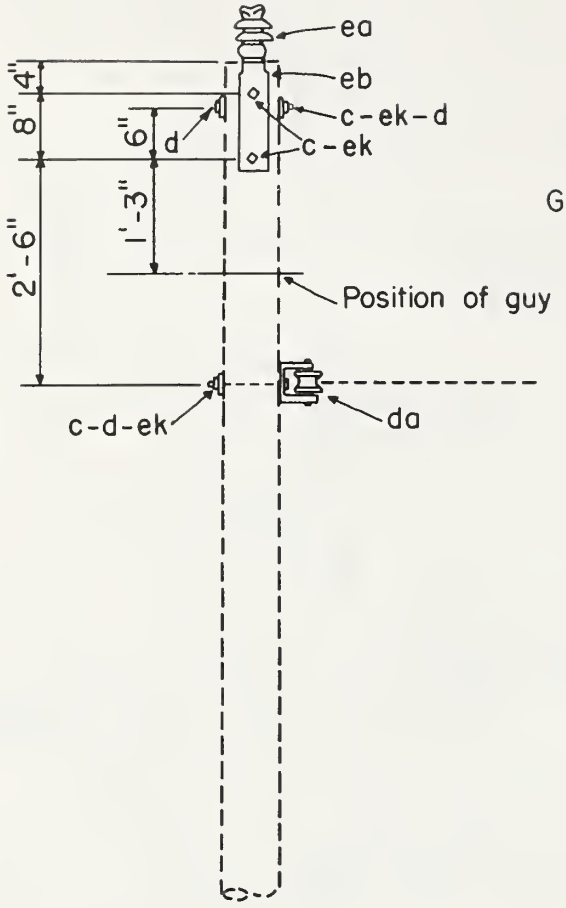
Max. line angle within load limits: 5°

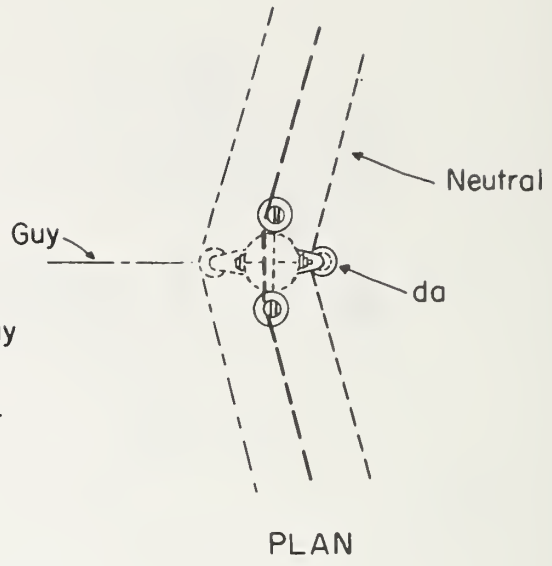
12.5/7.2 kV 1-PHASE

0° TO 5° ANGLE, DOUBLE PRIMARY SUPPORT

Apr., 1983

AI-IP, AI-IAP





PLAN

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	4	Bolt, machine, 5/8" x required length	ea	2	Insulator, post type
d	3	Washer, square, 2 1/4"	eb	2	Bracket, pole top
da	1	Bracket, insulated	ek		Locknuts, as required

DESIGN LIMITS

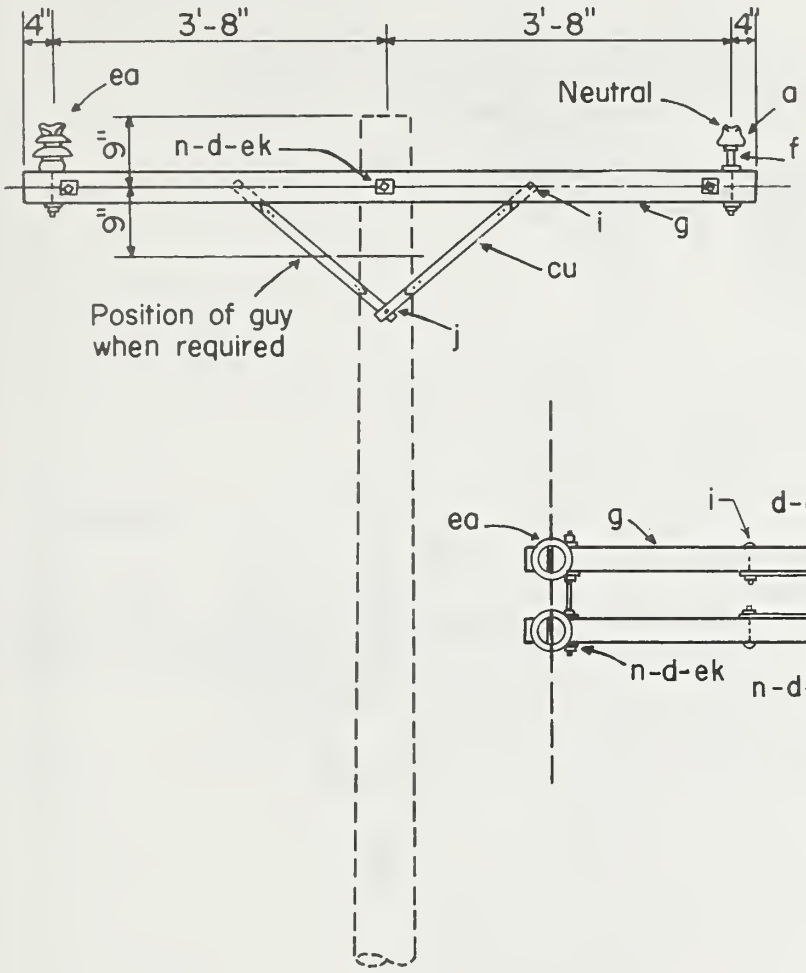
Max. transverse load: 1500 lbs. per conductor

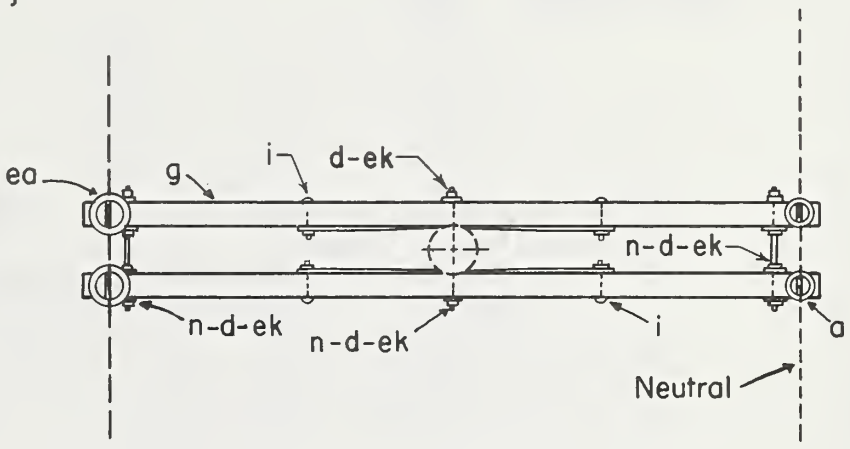
Max. line angle within load limits: 20°

12.5/7.2 kV, 1-PHASE DOUBLE PRIMARY SUPPORT

Apr., 1983

A2P





PLAN

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	2	Insulator, pin type	j	2	Screw, lag, 1/2" x 4"
d	10	Washer, square, 2 1/4"	n	3	Bolt, double arming, 5/8" x req'd. length
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"	ea	2	Insulator, post type
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ek		Locknuts, as required
cu	4	Brace, wood, 28"			
i	4	Bolt, carriage, 3/8" x 4 1/2"			

DESIGN LIMITS

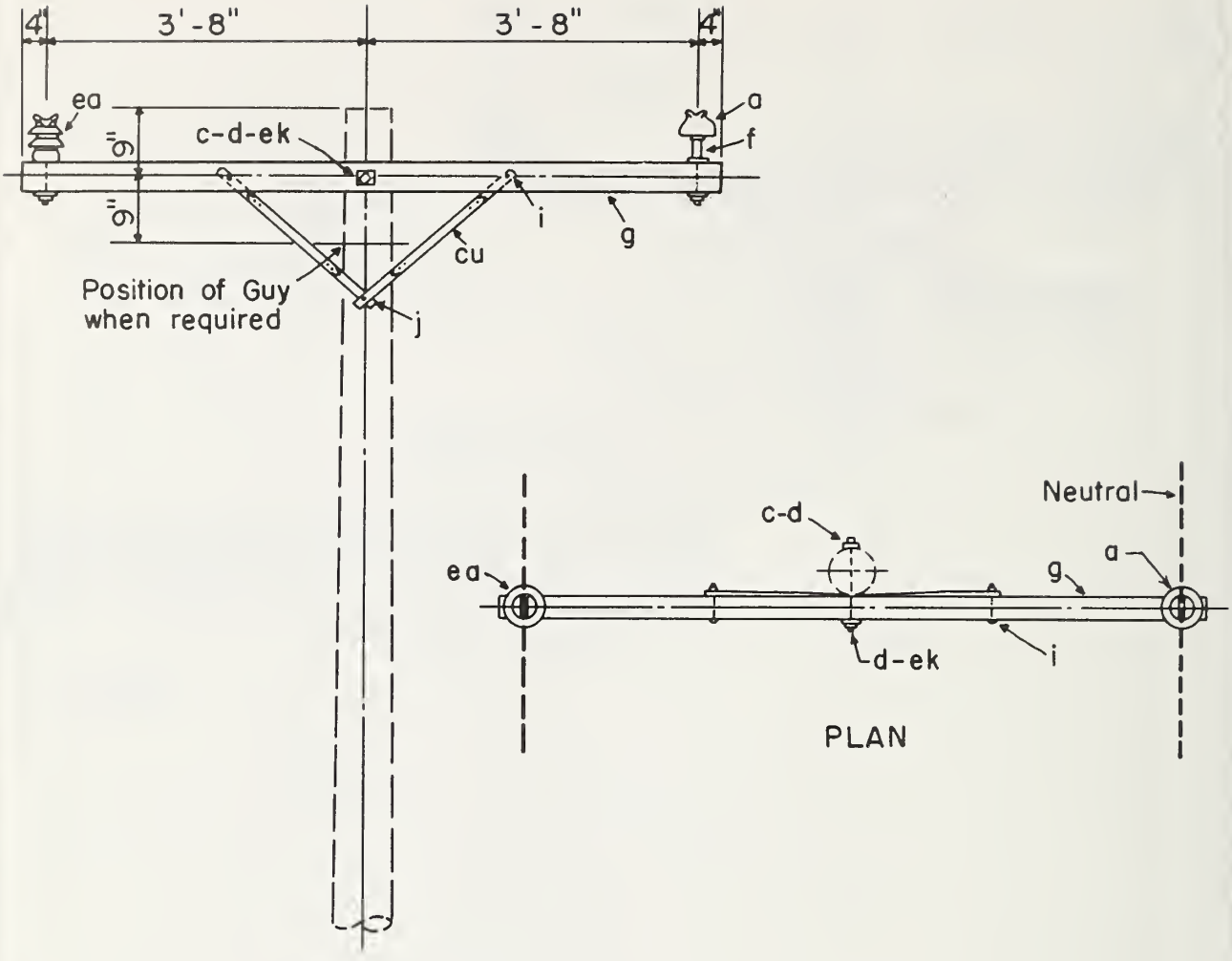
Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 20°

12.5/7.2 kV, 1-PHASE
CROSSARM CONSTRUCTION-DOUBLE SUPPORT

Apr., 1983

A9P



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	1	Insulator, pin type	cu	2	Brace, wood, 28"
c	1	Bolt, machine, 5/8" x required length	i	2	Bolt, carriage, 3/8" x 4 1/2"
d	2	Washer, square, 2 1/4"	j	1	Screw, lag, 1/2" x 4"
f	1	Pin, crossarm, steel, 5/8" x 10 3/4"	ea	1	Insulator, post type
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"			
ek		Locknuts, as required			

DESIGN LIMITS

Max. transverse load: 500 lbs. per conductor.

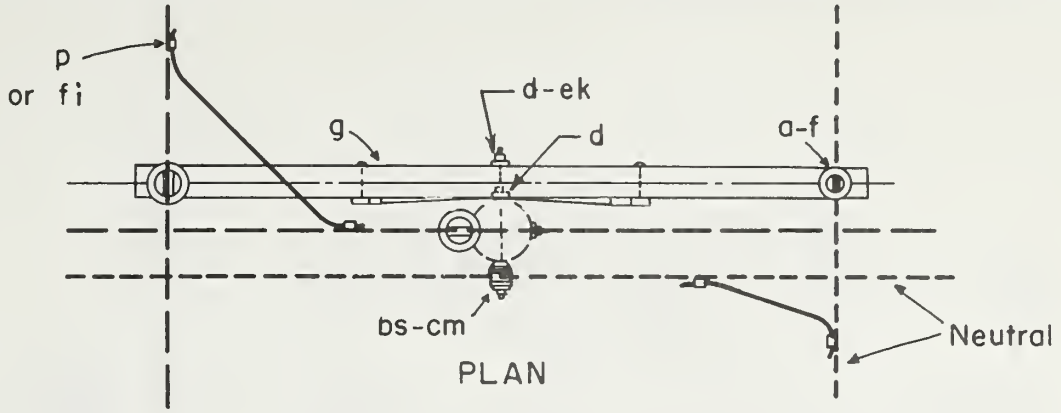
Max. line angle within load limits: 5°

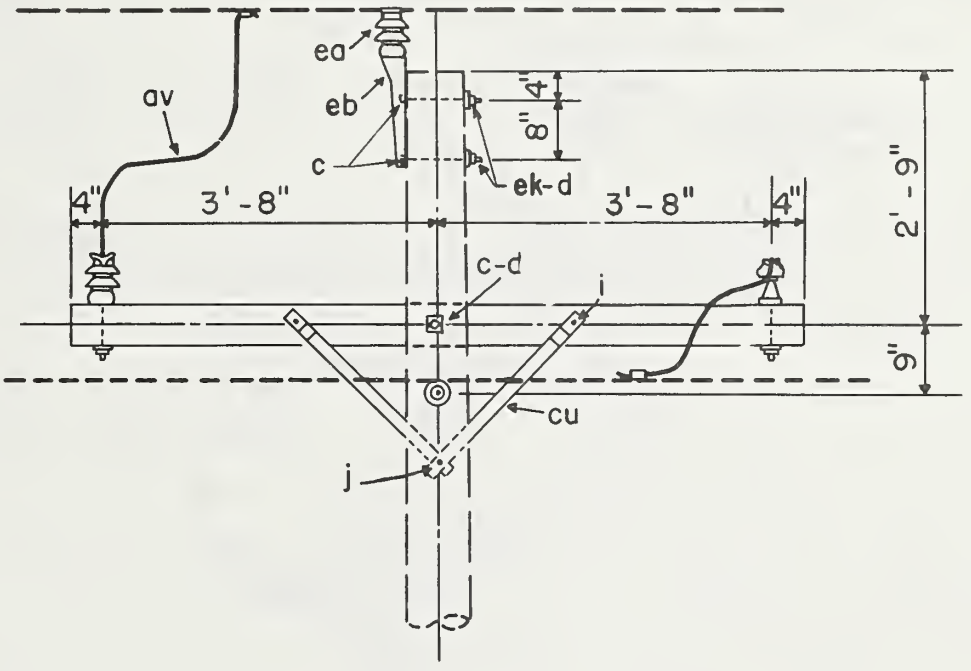
12.5/7.2 kV, 1-PHASE

CROSSARM CONSTRUCTION - SINGLE LINE ARM

Apr., 1983

A9-1P





ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	1	Insulator, pin type	av		Jumpers, as required
d	5	Washer, square, 2 1/4"	bs	1	Bolt, single upset
c	3	Bolt, machine, 5/8" x required length	ea	2	Insulator, post type
f	1	Pin, crossarm, steel, 5/8" x 10 3/4"	eb	1	Bracket, pole top
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	fi		Hot line connectors, as required
i	2	Bolt, carriage, 3/8" x 4 1/2"	cm	1	Spool insulator
j	1	Screw, lag, 1/2" x 4"	cu	2	Braces, wood, 28"
p		Connectors, as required	ek		Locknuts, as required

DESIGN LIMITS

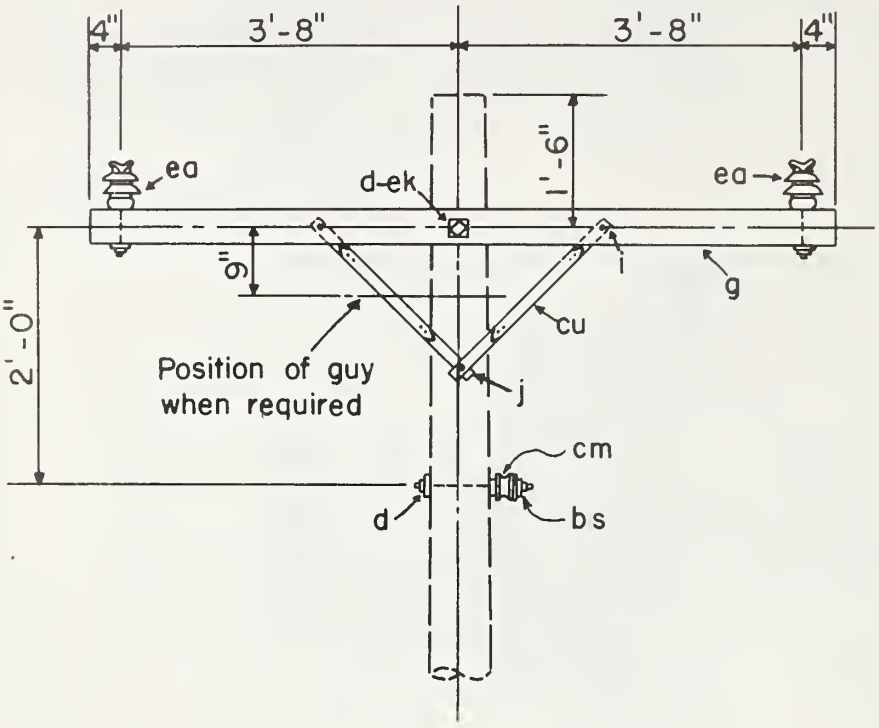
Max. transverse load: 500 lbs. per conductor

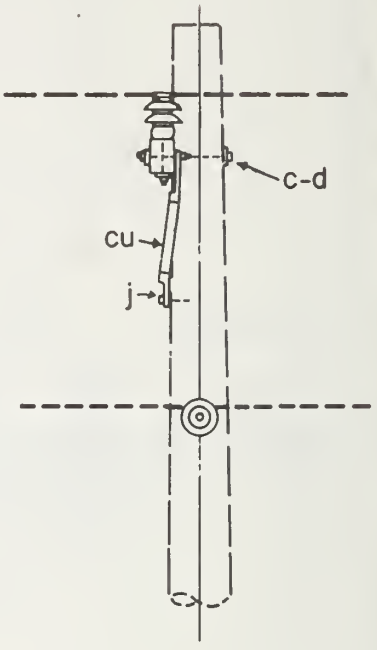
Max. line angle within load limits: 5°

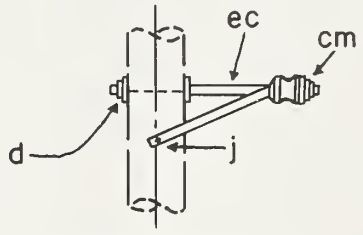
12.5/7.2 kV
1-PHASE CROSSARM CONSTRUCTION
SINGLE PHASE JUNCTION

Apr., 1983

A22P







Specify BIAP for
offset neutral assembly

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	1	Bolt, machine, 5/8" x required length	bs	1	Bolt, single upset (BIP only)
d	3	Washer, square, 2 1/4"	cu	2	Brace, wood, 28"
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ea	2	Insulator, post type
i	2	Bolt, carriage, 3/8" x 4 1/2"	ek		Locknuts as required
j	1	Screw, lag, 1/2" x 4" (BIP only)	ec	1	Bracket, offset neutral (BIAP only)
j	3	Screw, lag, 1/2" x 4" (BIAP only)	cm	1	Spool insulator

DESIGN LIMITS

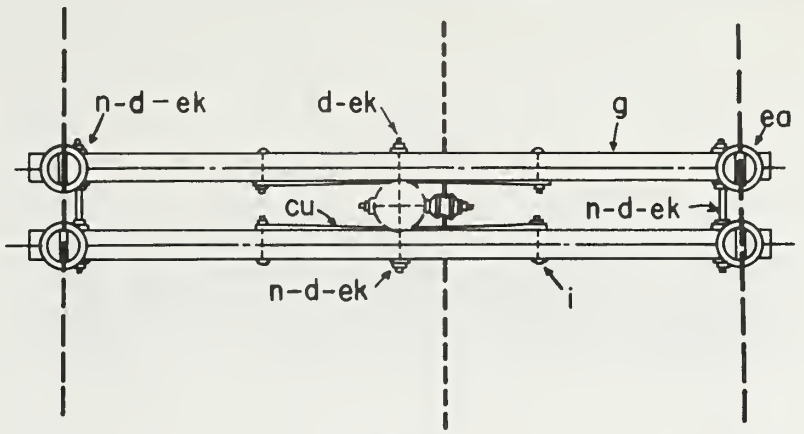
Max. transverse load: 750 lbs. per conductor

Max. line angle within load limits: 5°

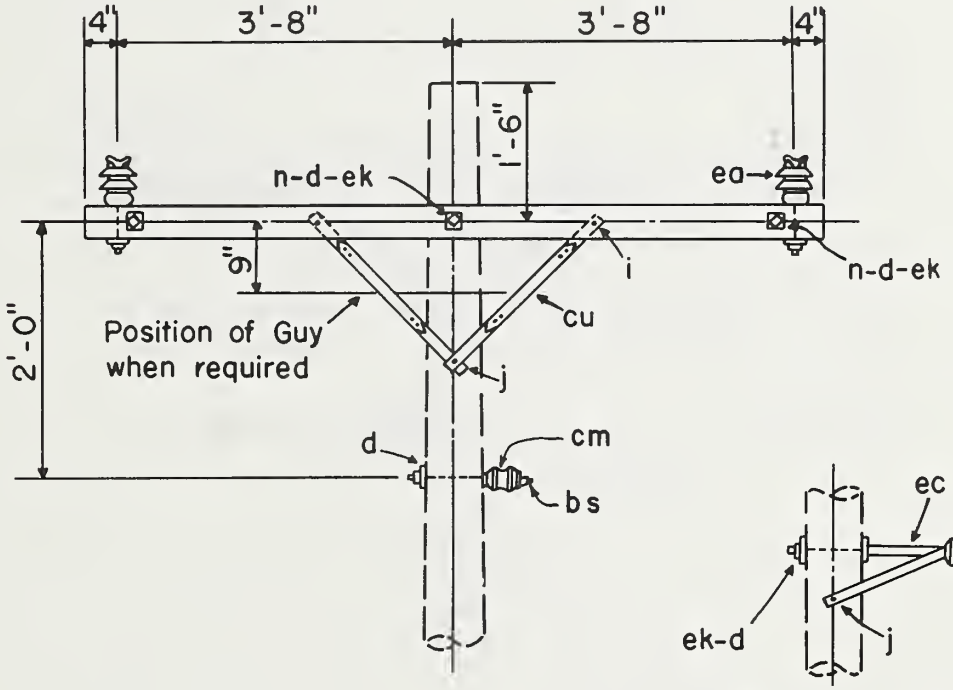
12.5/7.2 kV, 2-PHASE CROSSARM CONSTRUCTION-SINGLE PRIMARY SUPPORT

Apr., 1983

BIP, BIAP



PLAN



Specify BI-IAP for
offset neutral assembly

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
d	11	Washer, square, 2 1/4"	cu	4	Brace, wood, 28"
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ea	4	Insulator, post type
i	4	Bolt, carriage, 3/8" x 4 1/2"	ek		Locknuts, as required
j	2	Screw, lag, 1/2" x 4" (BI-IP only)	ec	1	Bracket, offset neutral (BI-IAP only)
n	3	Bolt, double arming, 5/8" x req'd length	j	4	Screw, lag, 1/2" x 4" (BI-IAP only)
bs	1	Bolt, single upset (BI-IP only)	cm	1	Spool insulator

DESIGN LIMITS

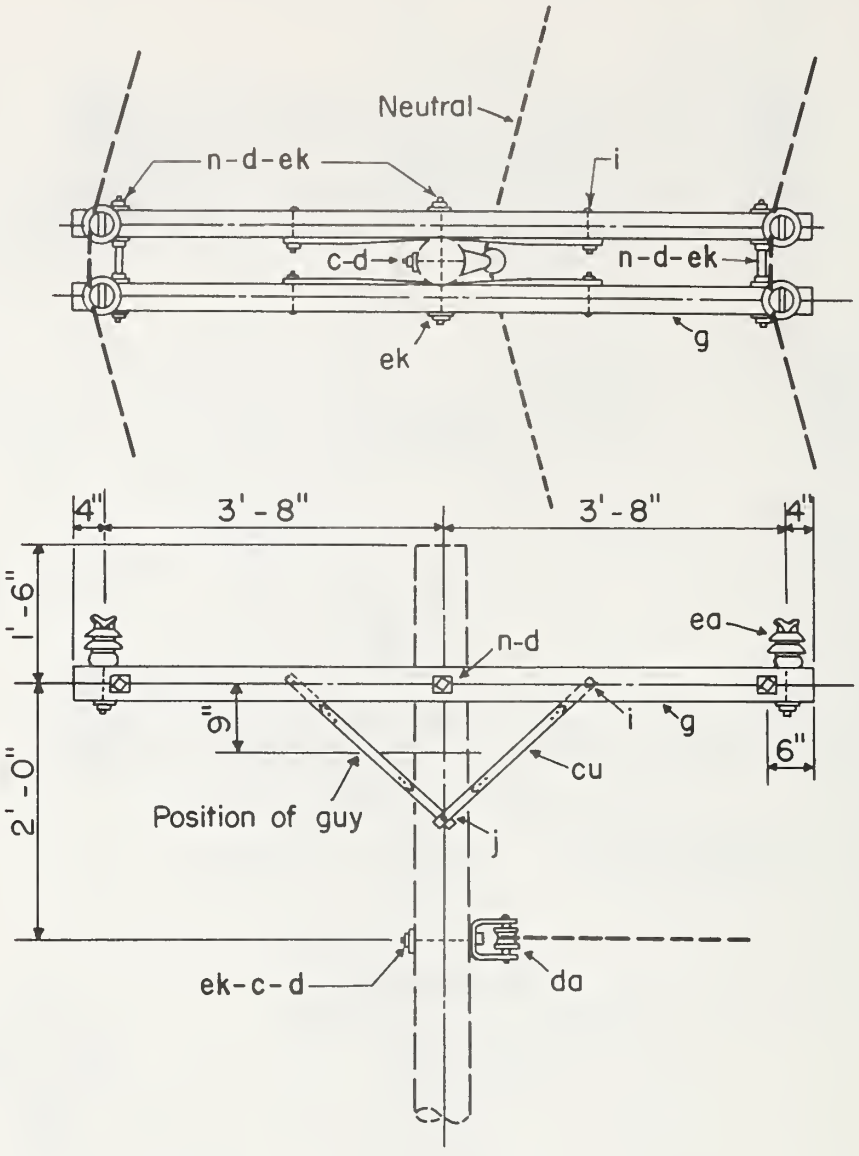
Max. transverse load: 1500 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV, 2-PHASE
CROSSARM CONSTRUCTION
DOUBLE PRIMARY SUPPORT

Apr., 1983

BI-IP, BI-IAP



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	1	Bolt, machine, 5/8" x required length	cu	4	Brace, wood, 28"
d	11	Washer, square, 2 1/4"	da	1	Bracket, insulated
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ea	4	Insulator, post type
i	4	Bolt, carriage, 3/8" x 4 1/2"	ek		Locknuts, as required
j	2	Screw, lag, 1/2" x 4"			
n	3	Bolt, double arming, 5/8" x required length			

DESIGN LIMITS

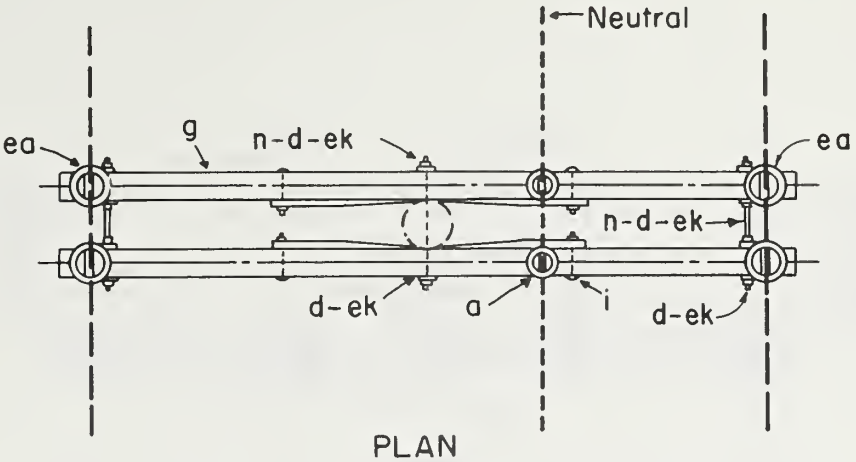
Max. transverse load: 1500 lbs. per conductor

Max. line angle within load limits: 20°

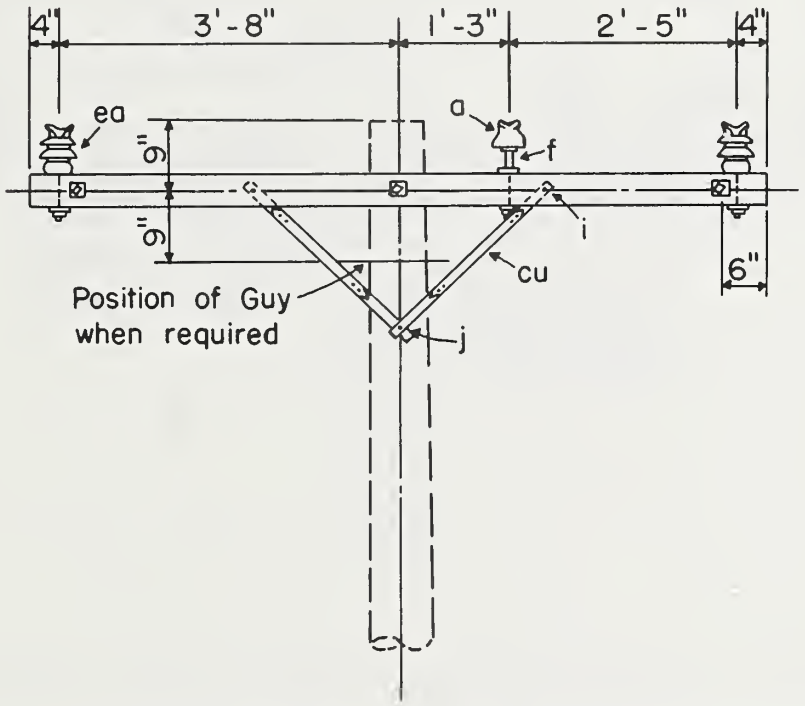
12.5/7.2 kV, 2-PHASE CROSSARM CONSTRUCTION

Apr., 1983

B2P



PLAN



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	2	Insulator, pin type	n	3	Bolt, double arming, 5/8" x required length
d	10	Washer, square, 2 1/4"	cu	4	Brace, wood, 28"
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"	ea	4	Insulator, post type
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ek		Locknuts, as required
i	4	Bolt, carriage, 3/8" x 4 1/2"			
j	2	Screw, lag, 1/2" x 4"			

DESIGN LIMITS

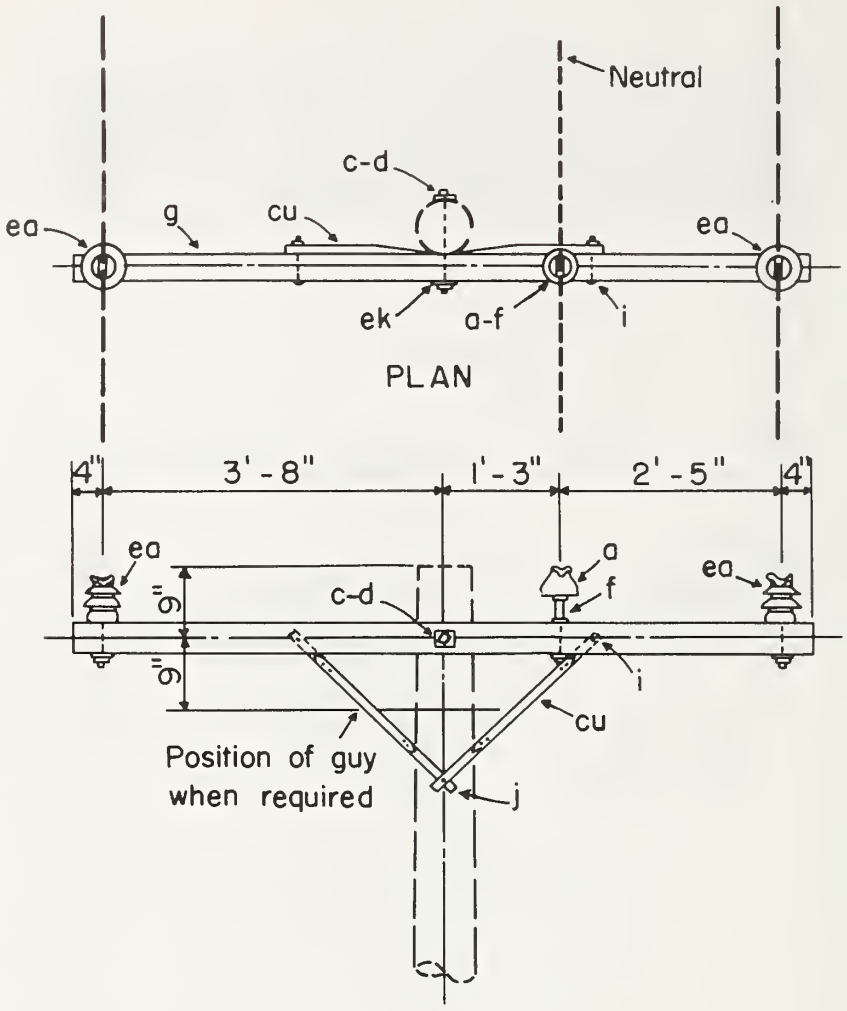
Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 20°

12.5/7.2 kV, TWO PHASE
CROSSARM CONSTRUCTION - DOUBLE LINE ARM

Apr., 1983

B9P



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	1	Insulator, pin type	i	2	Bolt, carriage, 3/8" x 4 1/2"
c	1	Bolt, machine, 5/8" x required length	j	1	Screw, lag, 1/2" x 4"
d	2	Washer, square, 2 1/4"	cu	2	Brace, wood, 28"
f	1	Pin, crossarm, steel, 5/8" x 10 3/4"	ea	2	Insulator, post type
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"			
ek		Locknuts, as required			

DESIGN LIMITS

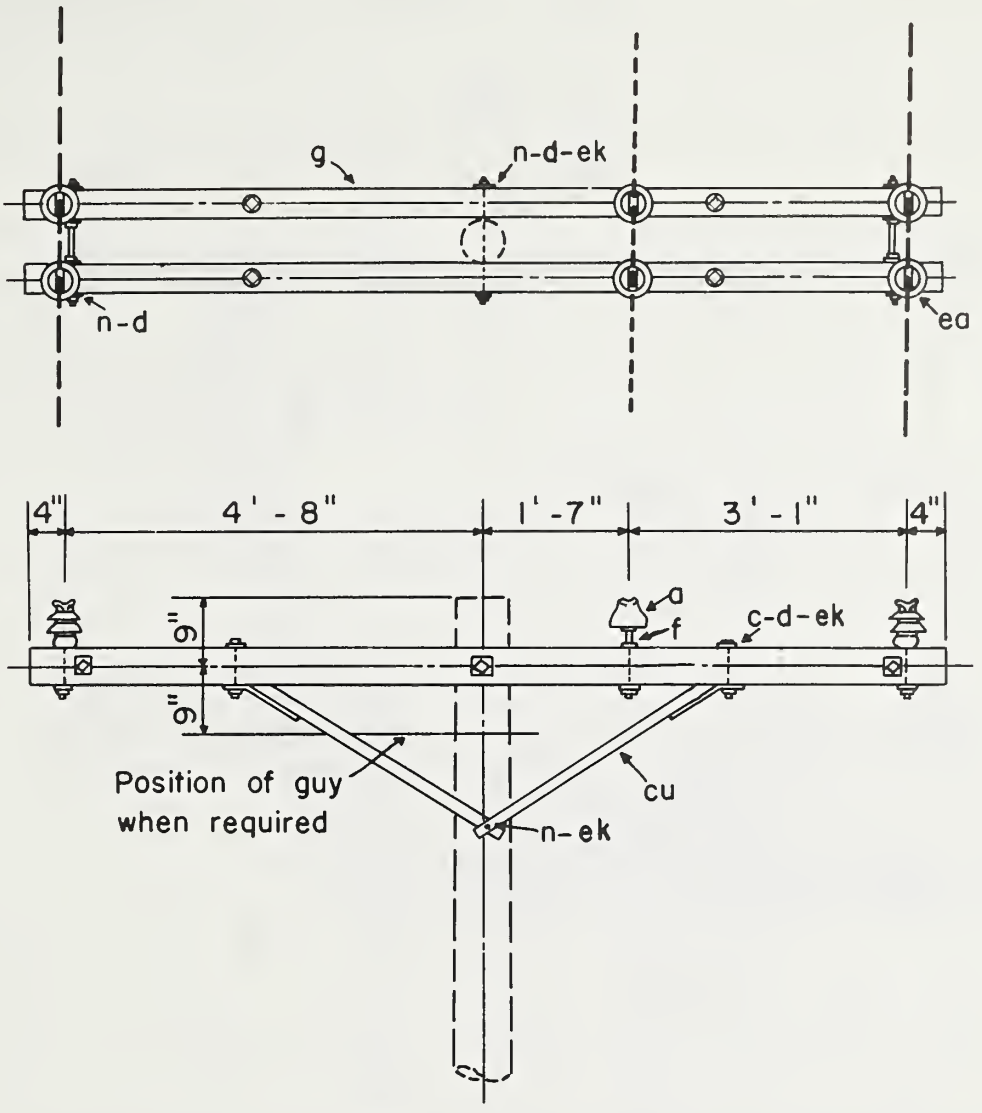
Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV, 2-PHASE CROSSARM CONSTRUCTION SINGLE LINE ARM

Apr., 1983

B9-1P



NOTE:

This construction should be used where future conversion to three phase is likely.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	2	Insulator, pin type	n	4	Bolt, double arming, 5/8" x req d. length
c	4	Bolt, machine, 1/2" x required length	cu	2	Brace, wood, 60" span
d	10	Washer, square, 2 1/4"	ea	4	Insulator, post type
d	4	Washer, round, 1 3/8"			
g	2	Crossarm, 3 5/8" x 4 5/8" x 10'-0"	ek		Locknuts, as required
f	2	Pin, crossarm, steel			

DESIGN LIMITS

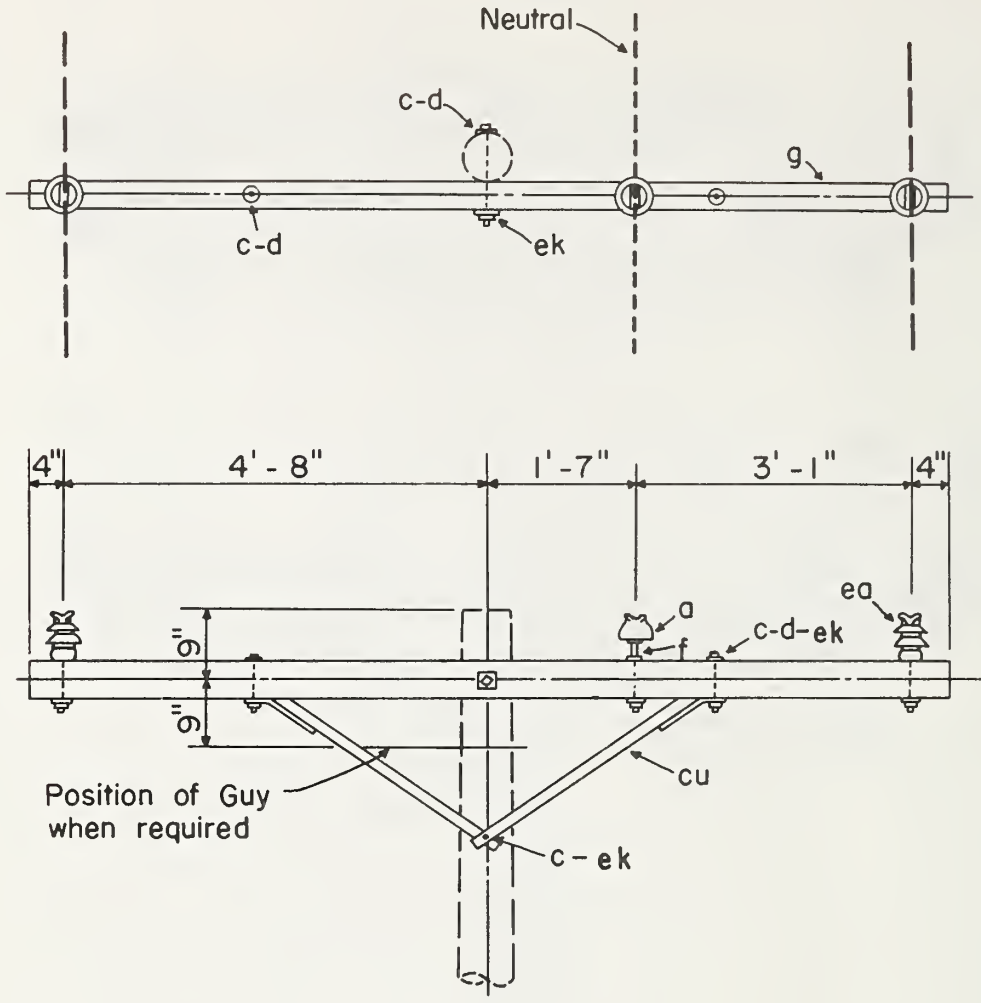
Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 20°

12.5/7.2 kV, TWO PHASE CROSSARM CONSTRUCTION - DOUBLE LINE ARM

Apr., 1983

B9-2P



NOTE:

This construction should be used where future conversion to three phase is likely.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	1	Insulator, pin type	g	1	Crossarm, 3 5/8" x 4 5/8" x 10' - 0"
c	2	Bolt, machine, 5/8" x required length	cu	1	Brace, wood, 60" span
c	2	Bolt, machine, 1/2" x required length	ea	2	Insulator, post type
d	3	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole			
d	2	Washer, round, 1 3/8" dia., 9/16" hole	ek		Locknuts, as required
f	1	Pin, crossarm, steel, 5/8" x 10 3/4"			

DESIGN LIMITS

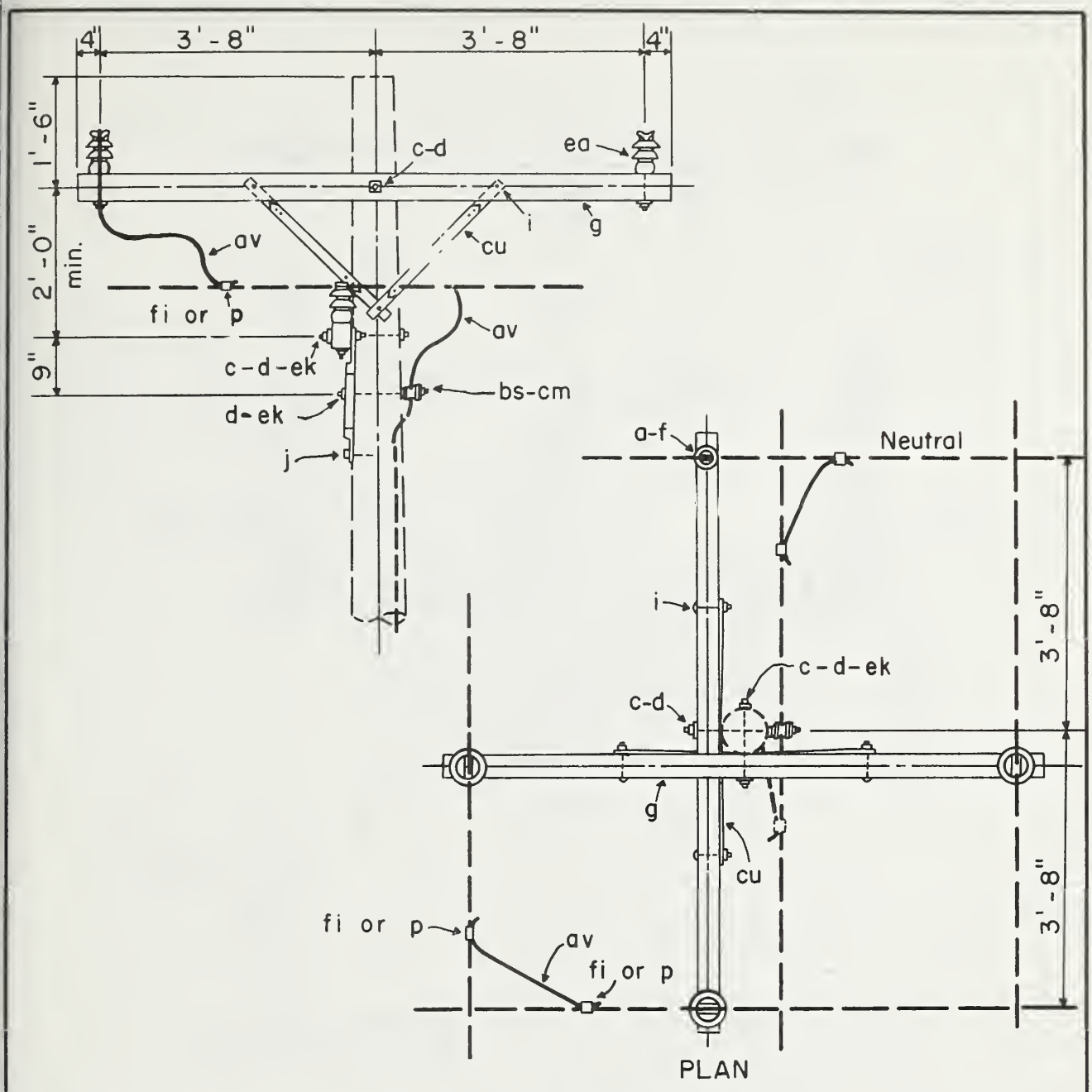
Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV
TWO-PHASE CROSSARM CONSTRUCTION
SINGLE LINE ARM

Apr., 1983

B9-3P



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	1	Insulator, pin type	av		Jumpers and leads, as required
c	2	Bolt, machine, 5/8" x required length	bs	1	Bolt, single upset
d	5	Washer, 2 1/4" x 2 1/4" x 3/16" x 13/16" hole	cm	1	Spool insulator
f	1	Pin, crossarm, steel, 5/8" x 10 1/4"	cu	4	Brace, wood, 28"
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ea	3	Insulator, post type
i	4	Bolt, carriage, 3/8" x 4 1/2"	fi		Hot line connector, as required
j	2	Screw, lag, 1/2" x 4"	ek		Locknuts, as required
p		Connectors, as required			

DESIGN LIMITS

Max. transverse load: 500 lbs. per conductor.

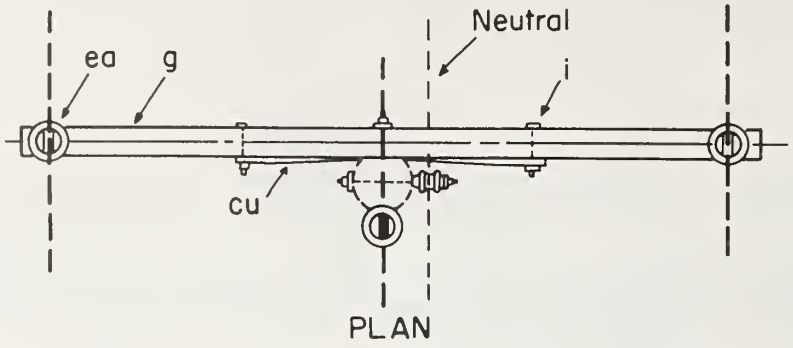
Max. line angle within load limits: 5°

12.5/7.2 kV

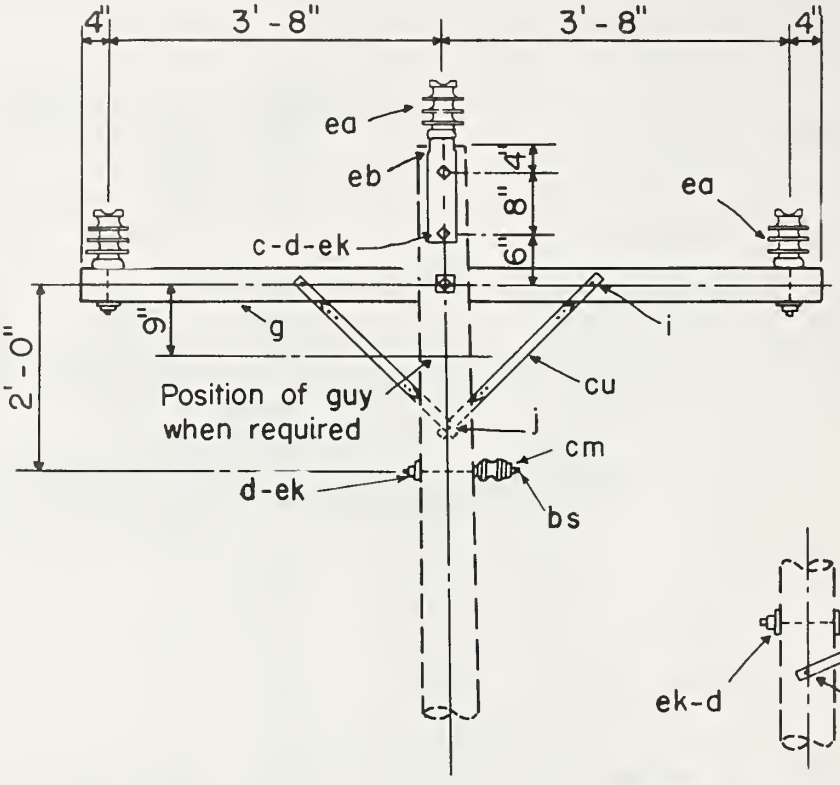
TWO PHASE, CROSSARM CONSTRUCTION

SINGLE PHASE JUNCTION AT 0° TO 5° ANGLE

Apr., 1983		B22P



PLAN



Specify CIAP for
offset neutral assembly

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
cm	1	Spool insulator			
c	3	Bolt, machine, 5/8" x required length	cu	2	Brace, wood, 28"
d	5	Washer, square, 2 1/4"	ea	3	Insulator, post type
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	eb	1	Bracket, pole top
i	2	Bolt, carriage, 3/8" x 4 1/2"	ek		Locknuts, as required
j	1	Screw, lag, 1/2" x 4" (CIP only)	ec	1	Bracket, offset, neut. (CIAP only)
bs	1	Bolt, single upset (CIP only)	j	3	Screw, lag, 1/2" x 4" (CIAP only)

DESIGN LIMITS

Not to be used with large conductar

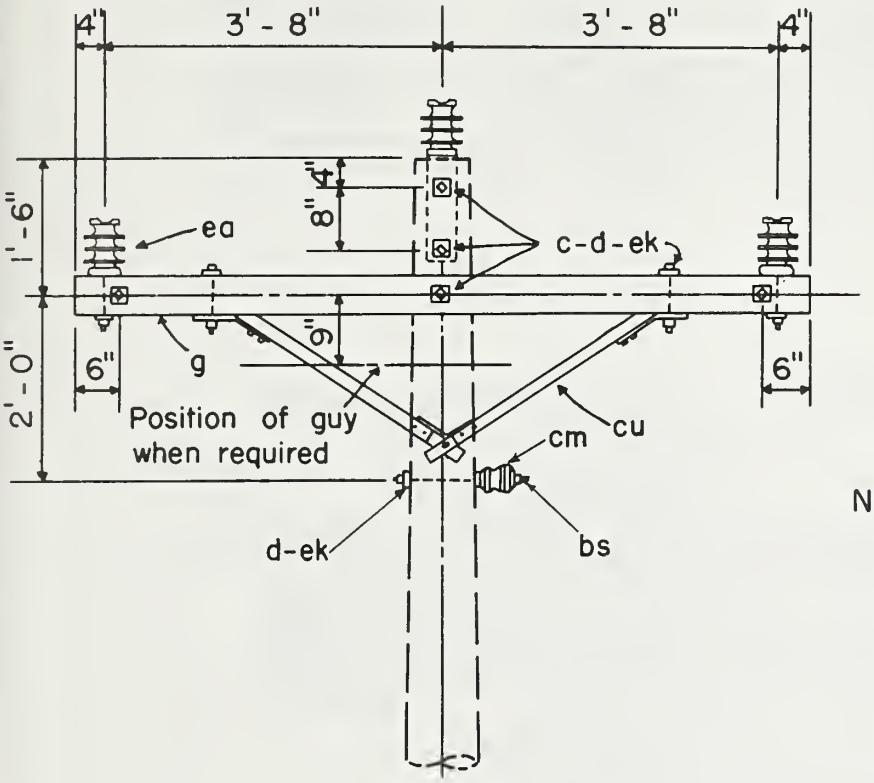
Max. transverse load: 750 lbs. per conductor

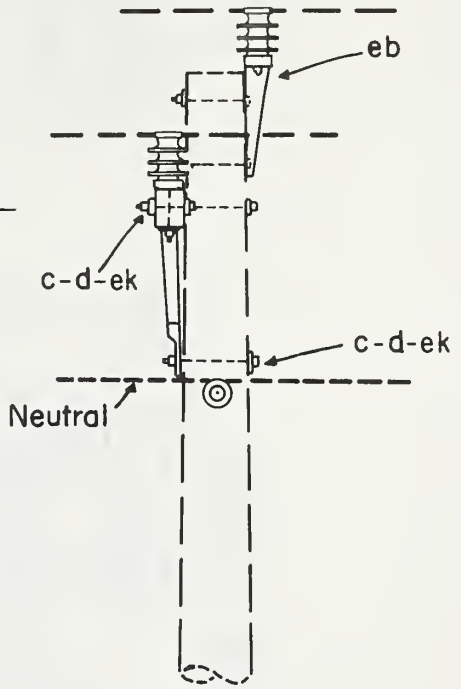
Max. line angle within load limits: 5°

12.5/7.2 kV, 3-PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT

Apr., 1983

CIP, CIAP





ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	2	Bolt, machine, 1/2" x required length	ea	3	Insulator, post type
c	6	Bolt, machine, 5/8" x required length	eb	1	Bracket, pole top
d	2	Washer, round, 1 3/8" diameter	ek		Locknuts, as required
d	10	Washer, square, 2 1/4"	cm	1	Spool insulator
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"			
bs	1	Bolt, single upset			
cu	1	Brace, wood, 60" span			

DESIGN LIMITS

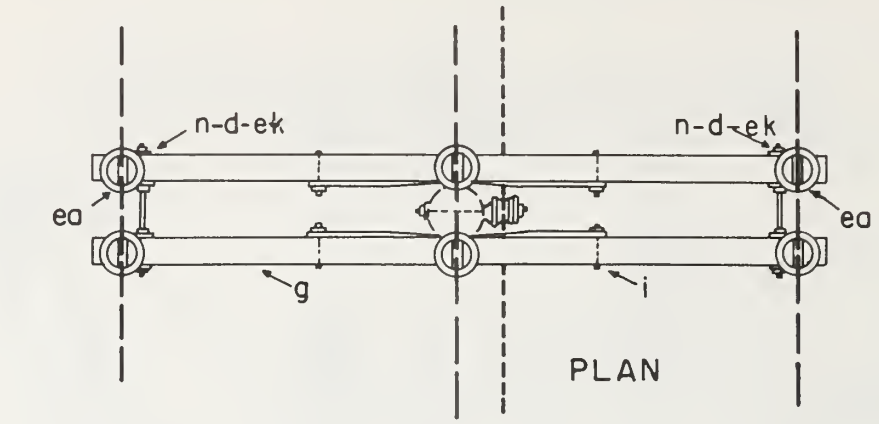
Max. transverse load: 750 lbs. per conductor

Max. line angle within load limits: 5°

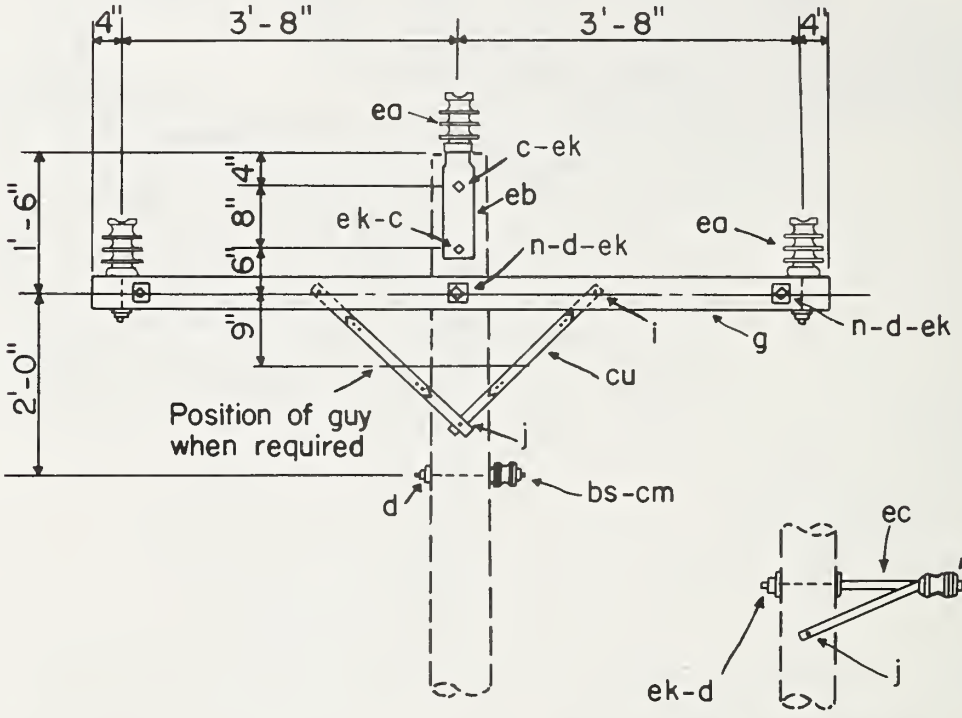
12.5/7.2 kV, 3-PHASE CROSSARM CONSTRUCTION SINGLE PRIMARY SUPPORT (LARGE CONDUCTORS)

Apr., 1983

CIPL



PLAN



Specify CI-IAP for offset neutral assembly

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	2	Bolt, machine, 5/8" x required length	bs	1	Bolt, single upset
d	11	Washer, square, 2 1/4"	ea	6	Insulator, post type
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	eb	2	Bracket, pole top
i	4	Bolt, carriage, 3/8" x 4 1/2"	ek		Locknuts, as required
j	2	Screw, lag, 1/2" x 4" (CI-IP only)	ec	1	Bracket offset, neut. (CI-IAP only)
n	3	Bolt, double arming, 5/8" x required length	j	4	Screw, lag, 1/2" x 4" (CI-IAP only)
cu	4	Brace, wood, 28"	cm	1	Spool insulator

DESIGN LIMITS

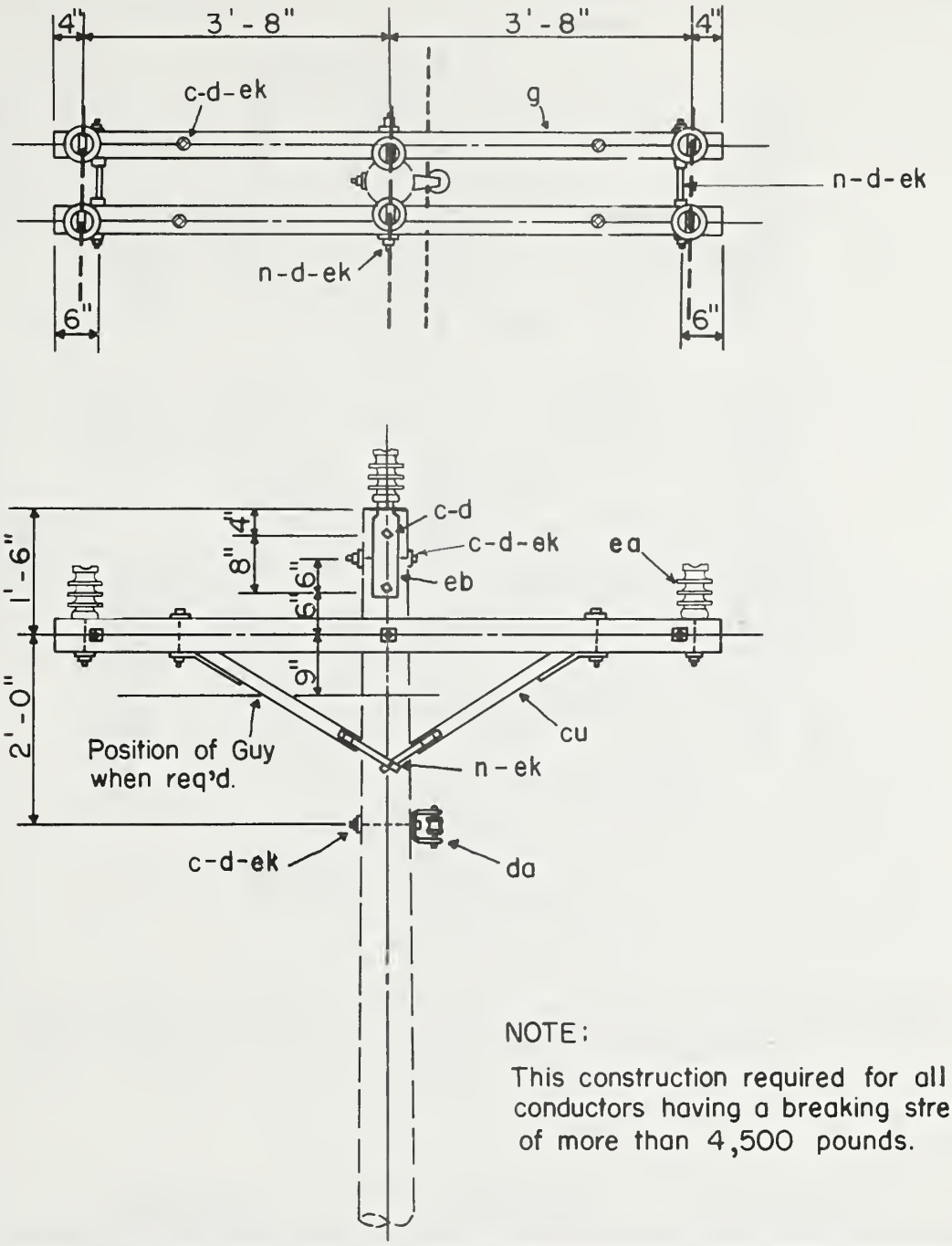
Max. transverse load: 750 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV, 3-PHASE CROSSARM CONSTRUCTION-DOUBLE PRIMARY SUPPORT

Apr., 1983

CI-IP, CI-IAP



NOTE:

This construction required for all conductors having a breaking strength of more than 4,500 pounds.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	4	Bolt, machine, 5/8" x required length	ea	6	Insulator, post type
c	4	Bolt, machine, 1/2" x required length	eb	2	Bracket, pole top
d	13	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	cu	2	Brace, wood, 60" span
d	4	Washer, round, 1 3/8" diam., 9/16" hole	da	1	Bracket, insulated
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"			
n	4	Bolt, double arming, 5/8" x req'd. length	ek		Locknuts, as required

DESIGN LIMITS

Max. transverse load: 1500 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV

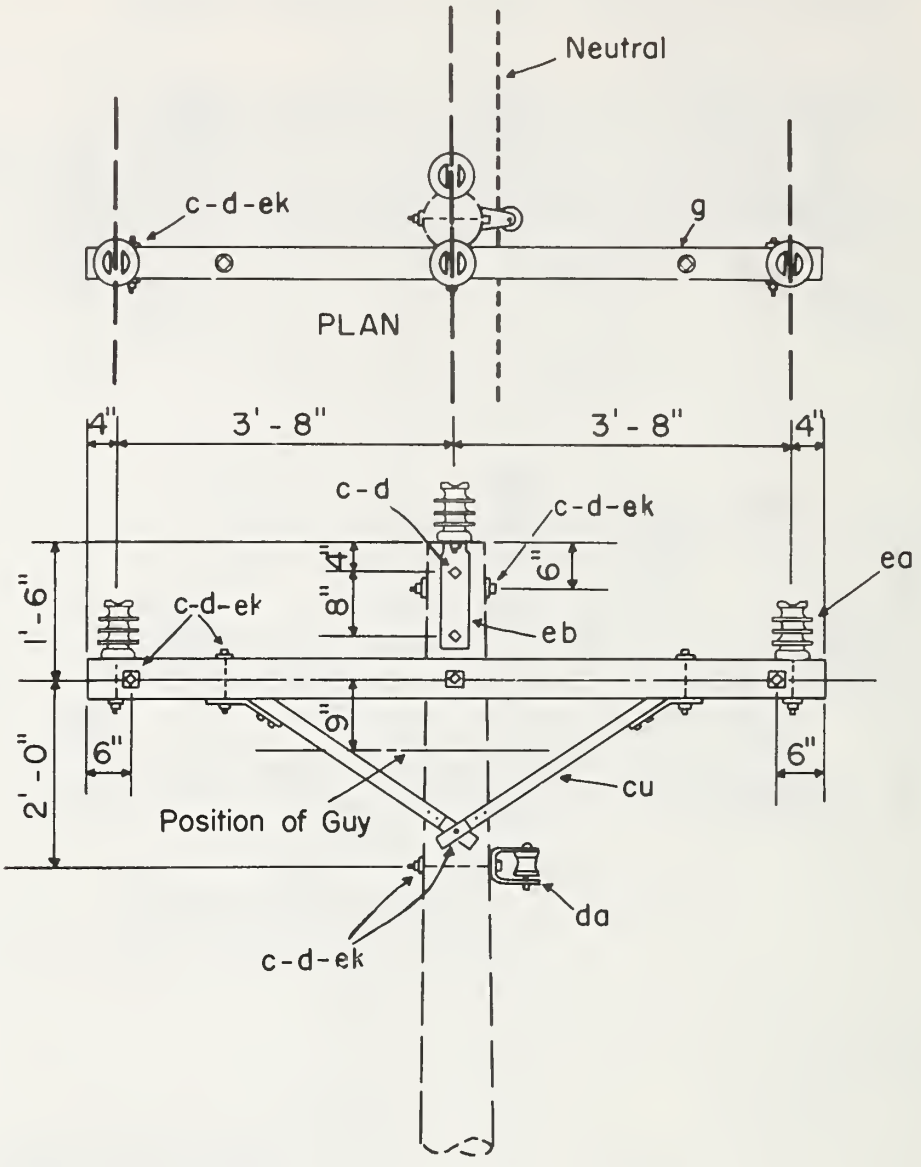
3-PHASE, CROSSARM CONSTRUCTION

DOUBLE PRIMARY SUPPORT

(LARGE CONDUCTORS)

Apr., 1983

C1-3P



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	2	Bolt, machine, 1/2" x required length	ea	4	Insulator, post type
c	8	Bolt, machine, 5/8" x required length	eb	2	Bracket, pole top
d	2	Washer, round, 1 3/8" diameter	ek		Locknuts, as required
d	10	Washer, square, 2 1/4"			
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"			
cu	1	Brace, wood, 60" span			
da	1	Bracket, insulated			

DESIGN LIMITS

Max. transverse load: 1000 lbs. per conductor

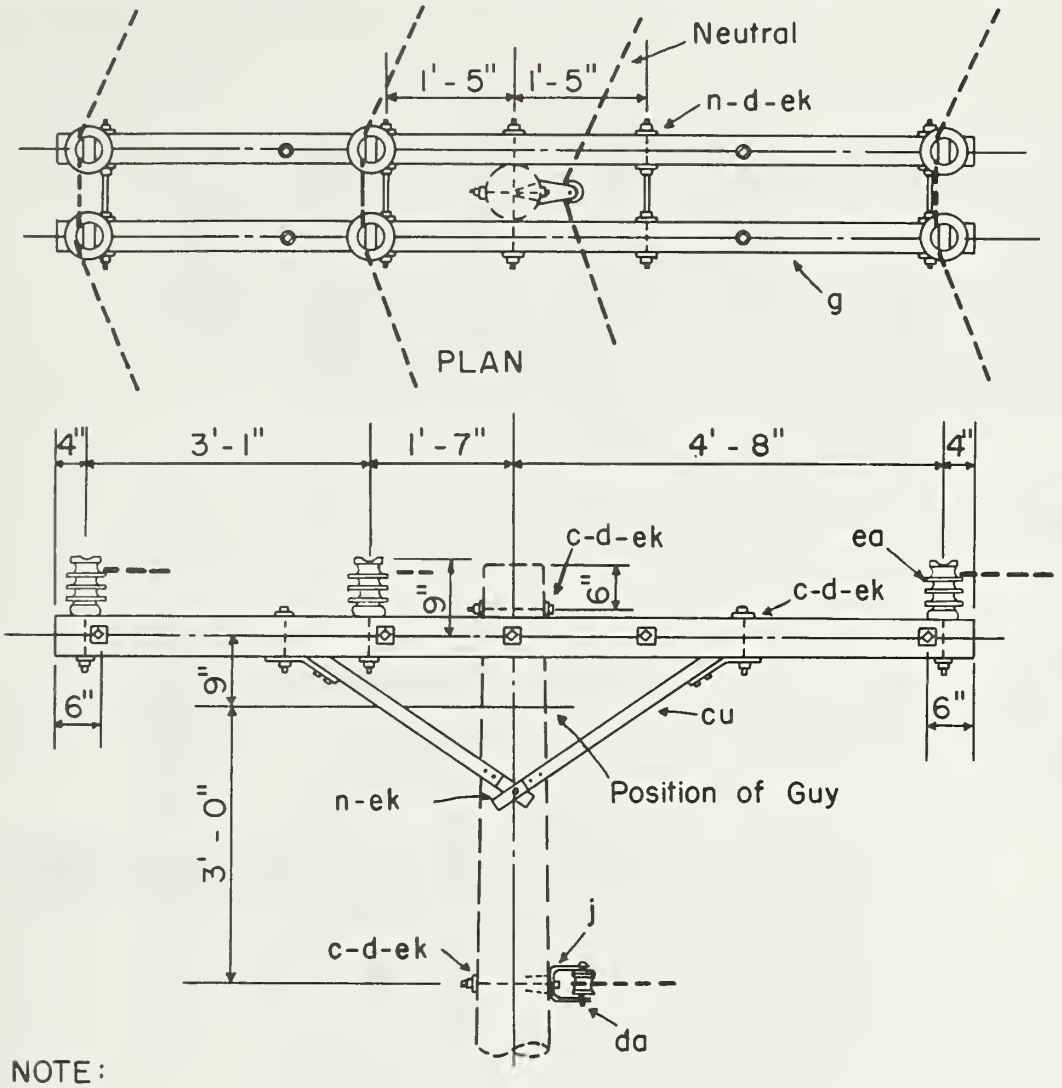
Max. line angle within load limits: 5°

12.5/7.2 kV, 3-PHASE, CROSSARM CONSTRUCTION

DOUBLE POLE-TOP SUPPORT (LARGE CONDUCTORS)

Apr., 1983

C1-4PL



NOTE:

Center phase wire or neutral wire may be located on the opposite side of the pole where necessary to avoid crossing of wires in midspan.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	4	Bolt, machine, 1/2" x required length	cu	2	Brace, wood, 60" span
c	2	Bolt, machine, 5/8" x required length	da	1	Bracket, insulated
d	4	Washer, round, 1 3/8" diameter	ea	6	Insulator, post type
d	21	Washer, square, 2 1/4"	ek		Locknuts, as required
g	2	Crossarm, 3 5/8" x 4 5/8" x 10'-0"			
j	2	Screw, lag, 1/2" x 4"			
n	6	Bolt, double arming, 5/8" x req'd. length			

DESIGN LIMITS

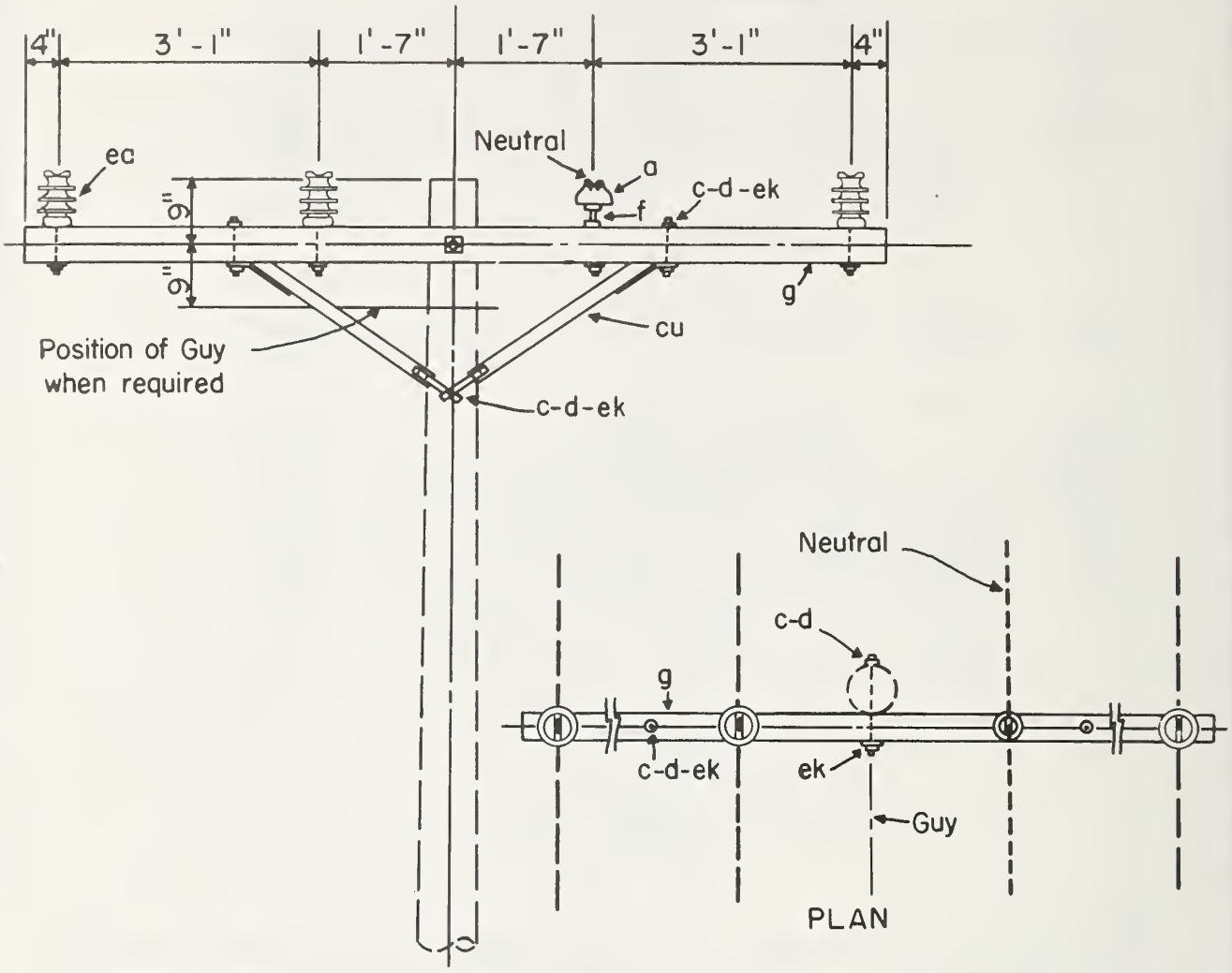
Max. transverse load: 2000 lbs. per conductor

Max. line angle within load limits: 20°

12.5/7.2 kV, 3-PHASE CROSSARM CONSTRUCTION
DOUBLE PRIMARY SUPPORT
(LARGE CONDUCTORS)

Apr., 1983

C2-2PL



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	1	Insulator, pin type	g	1	Crossarm, 3 5/8" x 4 5/8" x 10'-0"
c	2	Bolt, machine, 5/8" x required length	cu	1	Brace, wood, 60" span
c	2	Bolt, machine, 1/2 x required length	ea	3	Insulator, post type
d	3	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole			
d	2	Washer, round, 1 3/8" diameter, 9/16" hole	ek		Locknuts, as required
f	1	Pin, crossarm, steel, 5/8" x 10 3/4"			

DESIGN LIMITS

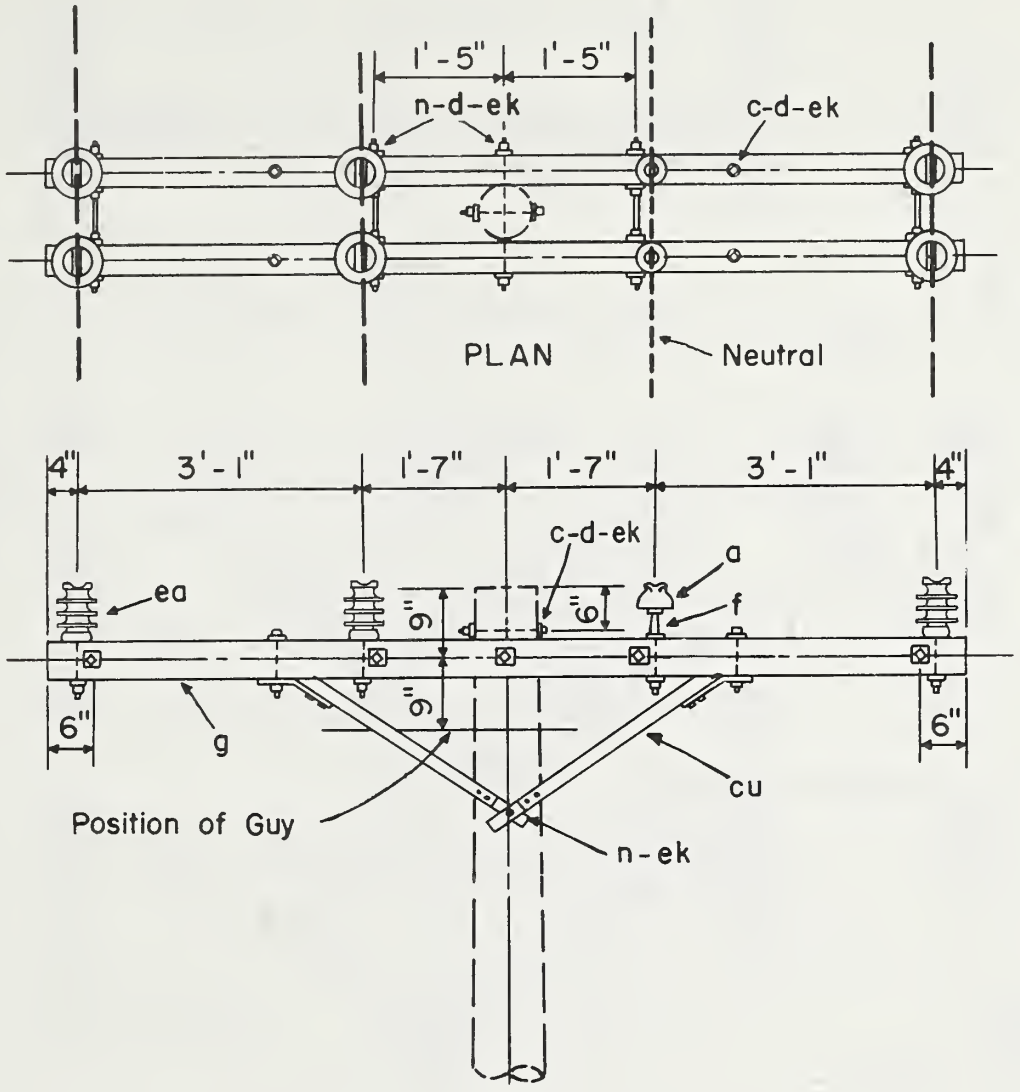
Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV
3-PHASE CROSSARM CONSTRUCTION
SINGLE LINE ARM

Apr., 1983

C9-1P



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	2	Insulator, pin type	cu	2	Brace, wood, 60" span
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"	ea	6	Insulator, post type
c	4	Bolt, machine, 1/2" x required length			
d	4	Washer, round, 1 3/8" diameter	ek		Locknuts, as required
d	20	Washer, square, 2 1/4"	c	1	Bolt, machine, 5/8" x required length
g	2	Crossarm, 3 5/8" x 4 5/8" x 10'-0"			
n	6	Bolt, double arming, 5/8" x req'd. length			

DESIGN LIMITS

Max. transverse load: 1000 lbs. per conductor.

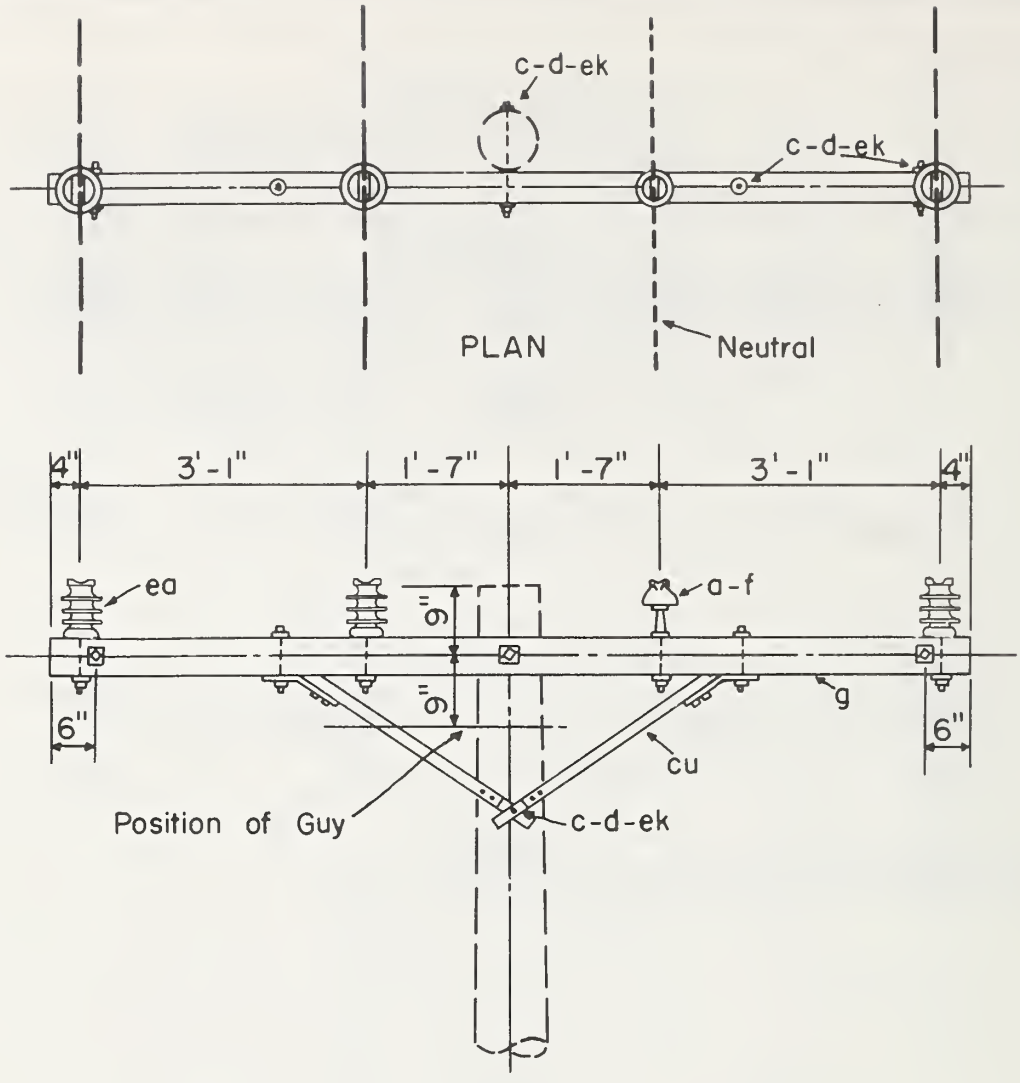
Max. line angle within load limits: 5°

12.5/7.2 kV THREE PHASE

CROSSARM CONSTRUCTION - DOUBLE LINE ARM (LARGE CONDUCTORS)

Apr., 1983

C9-2PL



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	1	Insulator, pin type	cu	1	Brace, wood, 60" span
f	1	Pin, crossarm, steel, 5/8" x 10 3/4"	ea	3	Insulator, post type
c	2	Bolt, machine, 1/2" x required length	ek		Locknuts, as required
c	4	Bolt, machine, 5/8" x required length			
d	2	Washer, round, 1 3/8" diameter			
d	7	Washer, square, 2 1/4"			
g	1	Crossarm, 3 5/8" x 4 5/8" x 10'-0"			

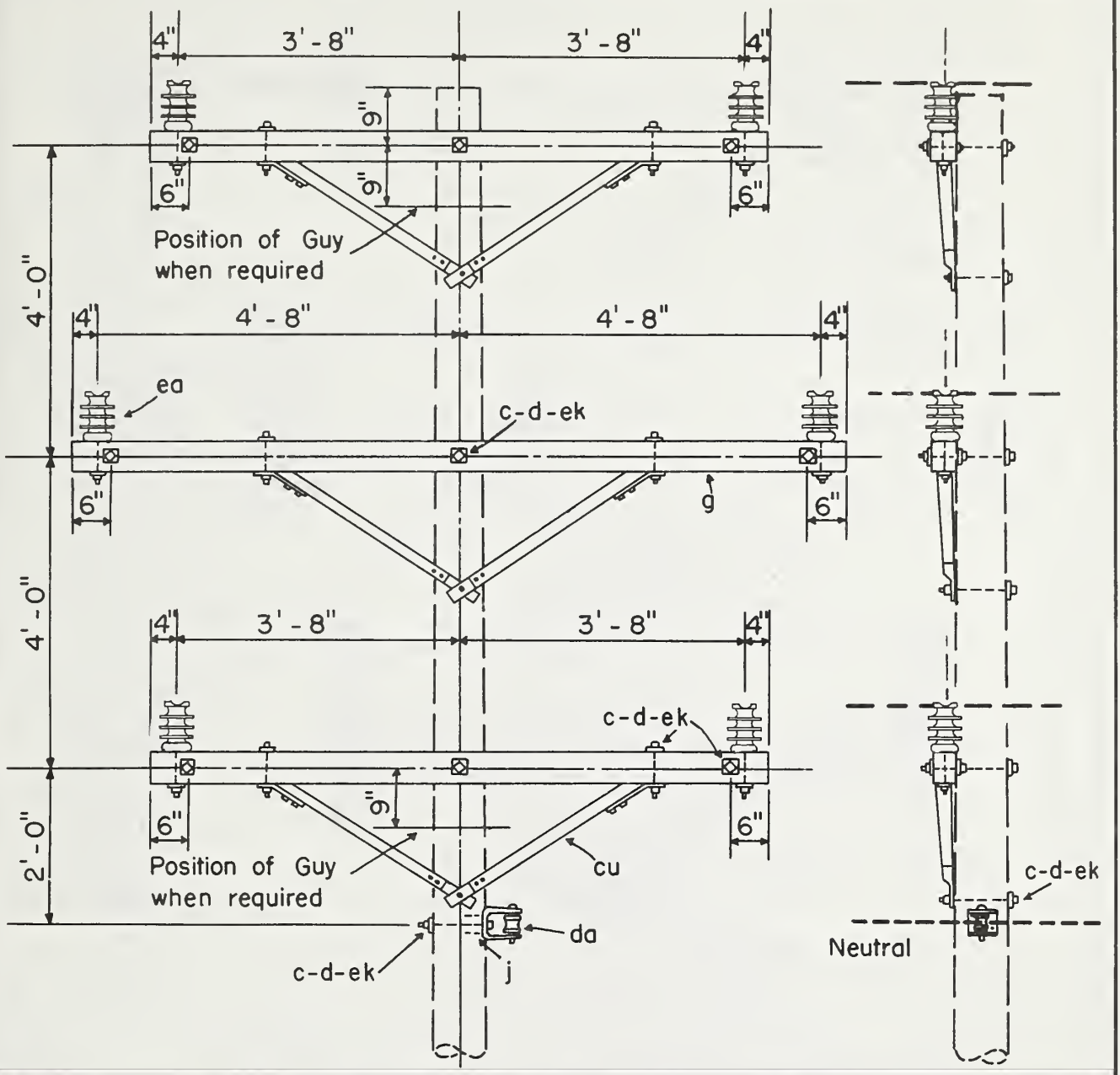
DESIGN LIMITS

Max. transverse load: 500 lbs. per conductor

Max. line angle within load limits: 5°

12.5/7.2 kV THREE PHASE CROSSARM CONSTRUCTION-SINGLE LINE ARM (LARGE CONDUCTORS)

Apr., 1983		C9-3PL



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	6	Bolt, machine, 1/2" x required length	da	1	Bracket, insulated
c	13	Bolt, machine, 5/8" x required length	ea	6	Insulator, post type
d	6	Washer, round, 1 3/8" diameter	ek		Locknuts, as required
d	22	Washer, square, 2 1/4"	j	2	Screw, lag, 1/2" x 4"
g	2	Crossarm, 3 5/8" x 4 5/8" x 8' - 0"			
g	1	Crossarm, 3 5/8" x 4 5/8" x 10' - 0"			
cu	3	Brace, wood, 60" span			

DESIGN LIMITS

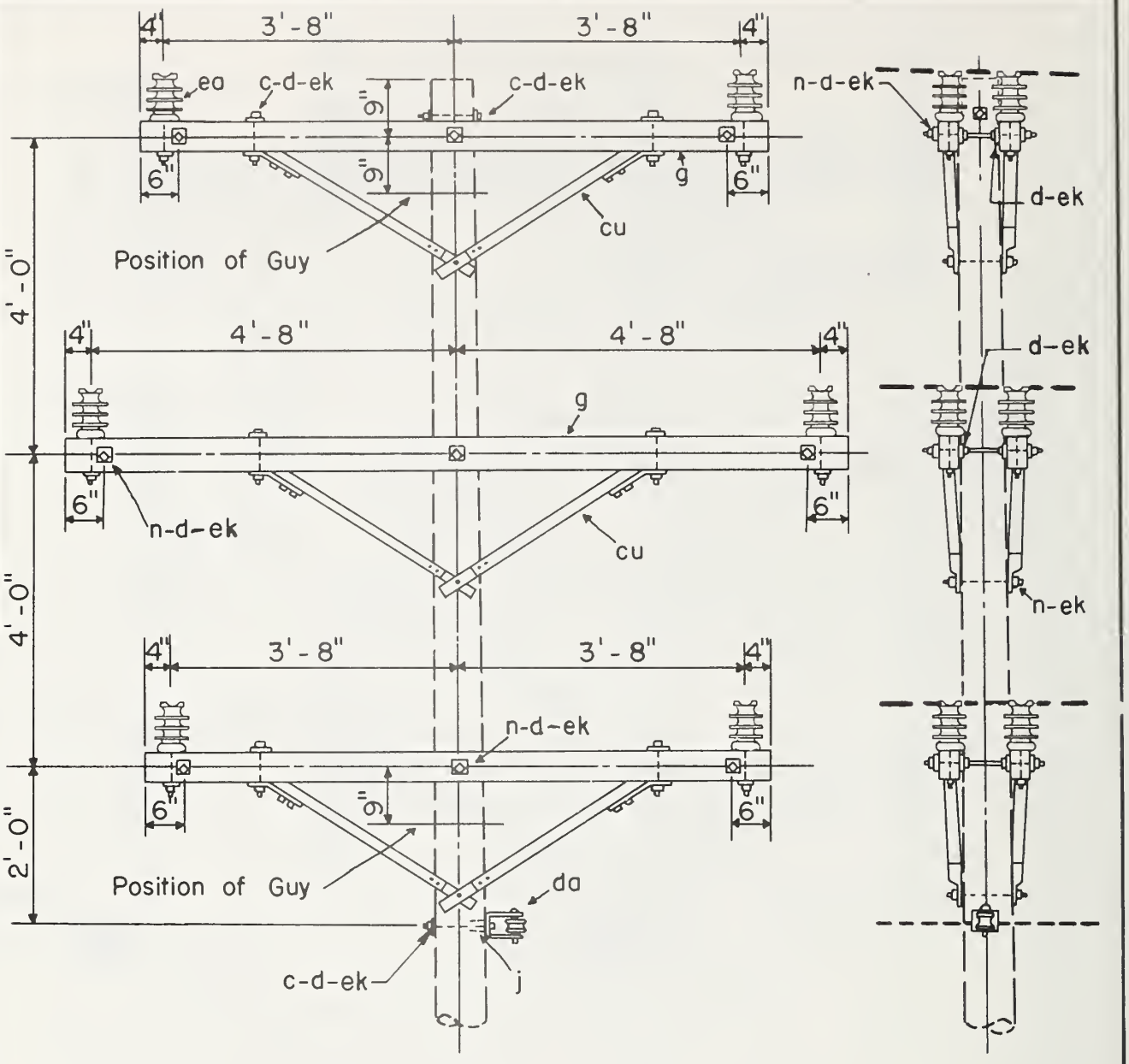
Max. transverse load: 1000 lbs. per conductor

Max. line angle within load limits: 20°

12.5/7.2 kV THREE PHASE CROSSARM CONSTRUCTION - DOUBLE CIRCUIT SINGLE PRIMARY SUPPORT (LARGE CONDUCTORS)

Apr., 1983

DC-CIPL



ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	12	Bolt, machine, 1/2" x required length	n	12	Bolt, double arming, 5/8" x required length
c	2	Bolt, machine, 5/8" x required length	cu	6	Brace, wood, 60" span
d	33	Washer, square, 2 1/4"	da	1	Bracket, insulated
d	12	Washer, round, 1 3/8" diameter	ea	12	Insulator, post type
g	4	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	ek		Locknuts, as required
g	2	Crossarm, 3 5/8" x 4 5/8" x 10'-0"			
j	2	Screw, lag, 1/2" x 4"			

DESIGN LIMITS

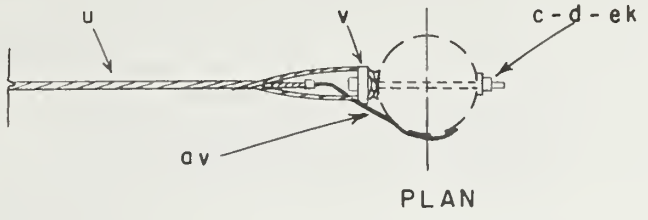
Max. transverse load: 2000 lbs per conductor

Max line angle within load limits: 20°

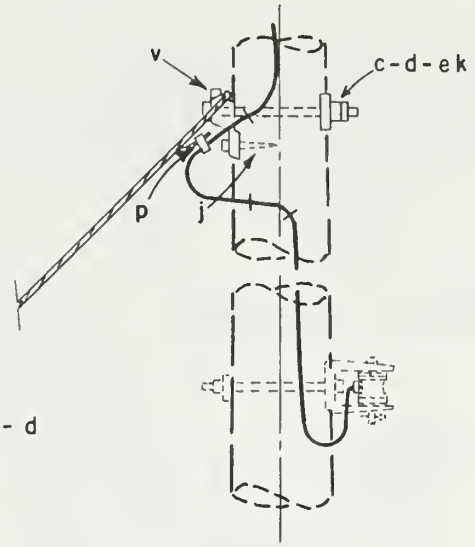
12.5/7.2 kV THREE PHASE CROSSARM CONSTRUCTION - DOUBLE CIRCUIT DOUBLE PRIMARY SUPPORT (LARGE CONDUCTORS)

Apr., 1983

DC-C1-3PL



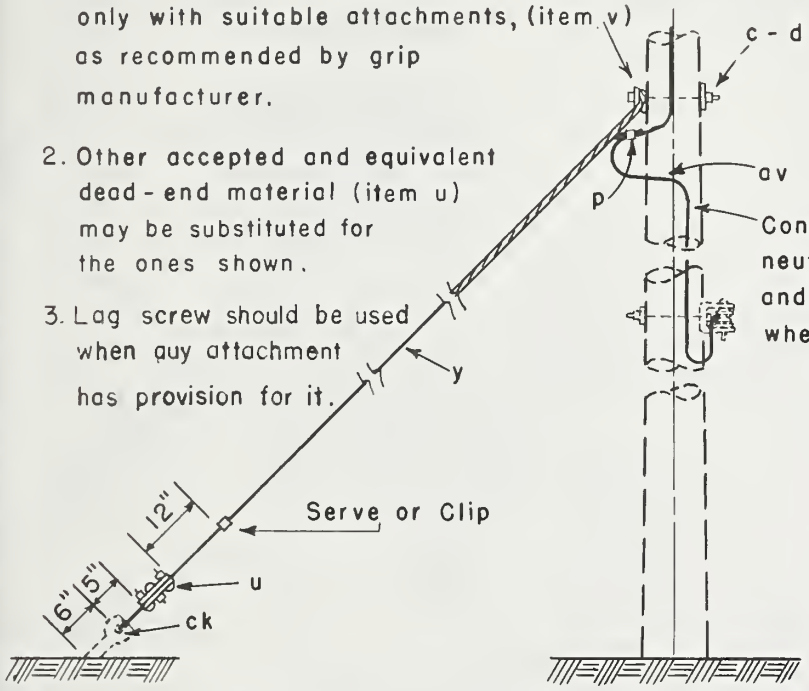
PLAN



E1-3

NOTES:

1. Formed type grips may be used only with suitable attachments, (item v) as recommended by grip manufacturer.
2. Other accepted and equivalent dead-end material (item u) may be substituted for the ones shown.
3. Lag screw should be used when guy attachment has provision for it.



E1-1, E1-2

See guide drawings M30-1 and M30-2

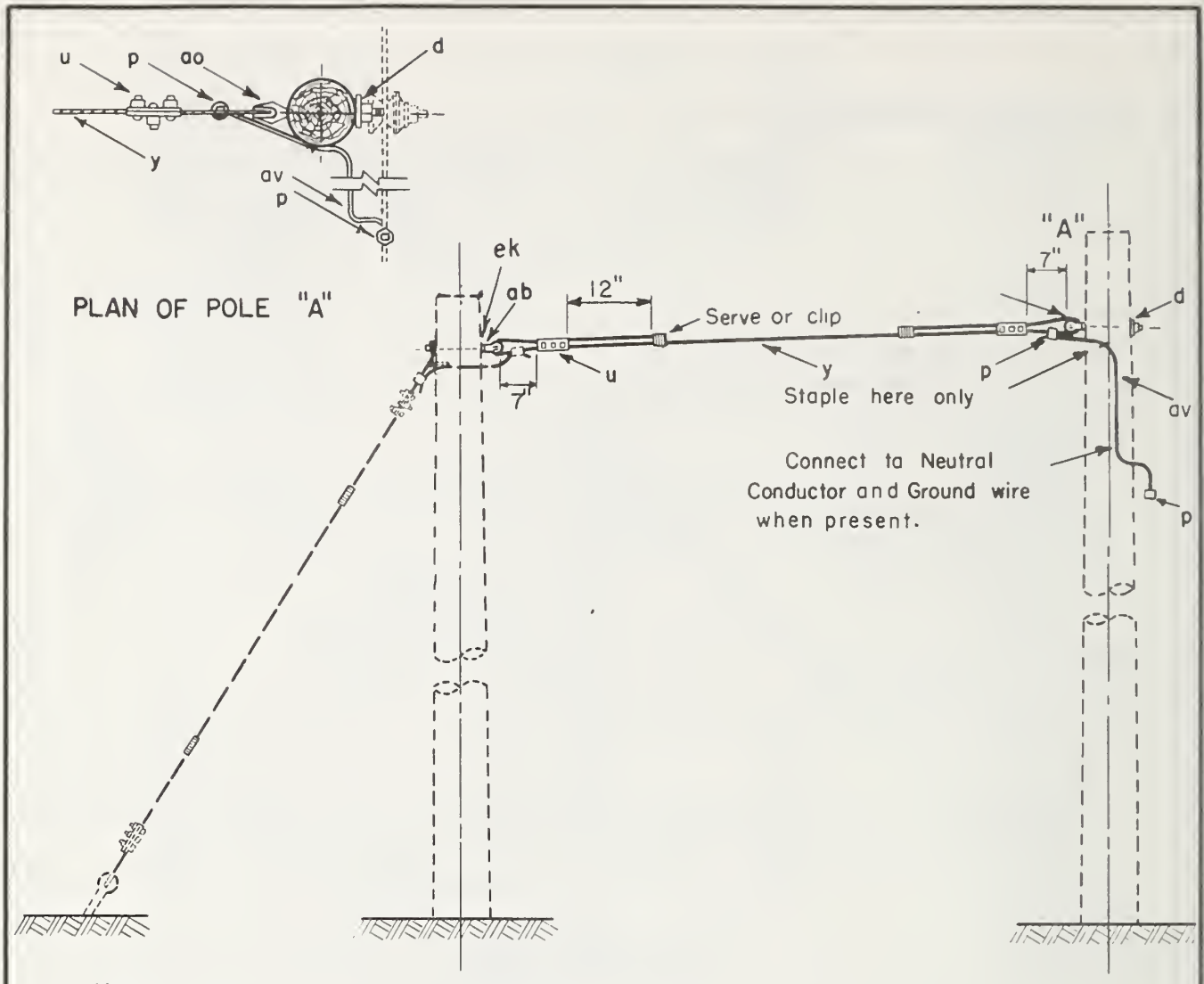
ITEM	MATERIAL	ASSEMBLY UNIT E1-1 No. REQ'D.	E1-2 No. REQ'D.	E1-3 No. REQ'D.
c	Bolt, machine, 5/8" x required length	1	1	1
d	Washer, curved	1-2 1/4" x 2 1/4"	1-3" x 3"	1-4" x 4"
j	Screw, lag, 1/2" x 4"			1
p	Connectors	as req'd	as req'd	as req'd
u	Deadend for guy strand	2	2	2
v	Guy attachment (rating)	1-(5200 lbs.)	1-(5200 lbs.)	1-(8500 lbs)
y	Guy wire, S.M., 7 strand req'd length by	1/4"	3/8"	7/16"
av	Jumper, No. 4 stranded Al. alloy or equiv.	req'd length	req'd length	req'd length
ck	Clamp, anchor rod bonding	1	1	1
ek	Locknuts, as required			

12.5 / 7.2 kV

SINGLE DOWN GUY, THROUGH BOLT TYPE

Apr., 1983

E1-1, E1-2, E1-3



Note:

Other accepted and equivalent items of deadend material may be substituted for the 3-bolt clamp shown.

ITEM	MATERIAL	ASSEMBLY UNIT E2-1	E2-2	E2-3
		Nº. REQ'D.	Nº. REQ'D.	Nº. REQ'D.
d	Washer, curved	1-2 1/4"x2 1/4"	1-3"x3"	1-4"x4"
u	Deadend for guy strand	light duty(2)	heavy duty(2)	heavy duty(2)
y	Guy wire, 7 strand S.M. req'd length	1/4"	3/8"	7/16"
ab	Nut, thimble type eye, 5/8"	1	1	1
ao	Bolt, thimbleye, 5/8"x req'd. length by	1	1	1
av	Jumper, # 4 stranded AL. alloy or equiv.	1	1	1
p	Connectors, as req'd.			
ek	Locknuts, as required			

12.5/7.2 kV

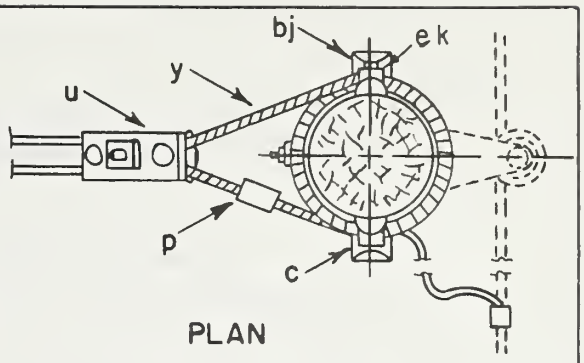
SINGLE OVERHEAD GUY, THROUGH BOLT TYPE

Apr., 1983

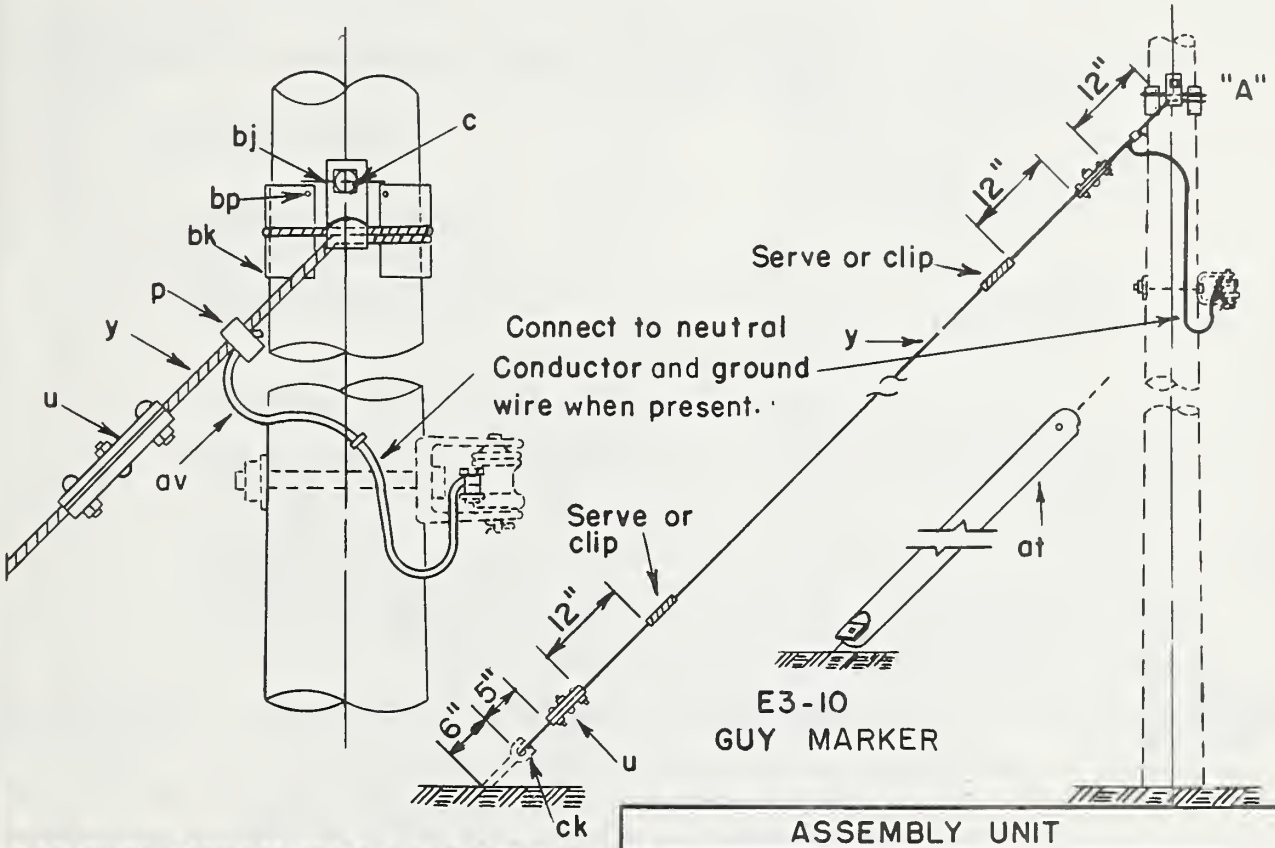
E2-1, E2-2, E2-3

NOTES:

1. Other accepted and equivalent (item u) guy clamps may be substituted for the 3-bolt clamps shown.
2. Assemblies E1-2 and E1-3 (throughbolt type) are preferred units.



PLAN



E3-10
GUY MARKER

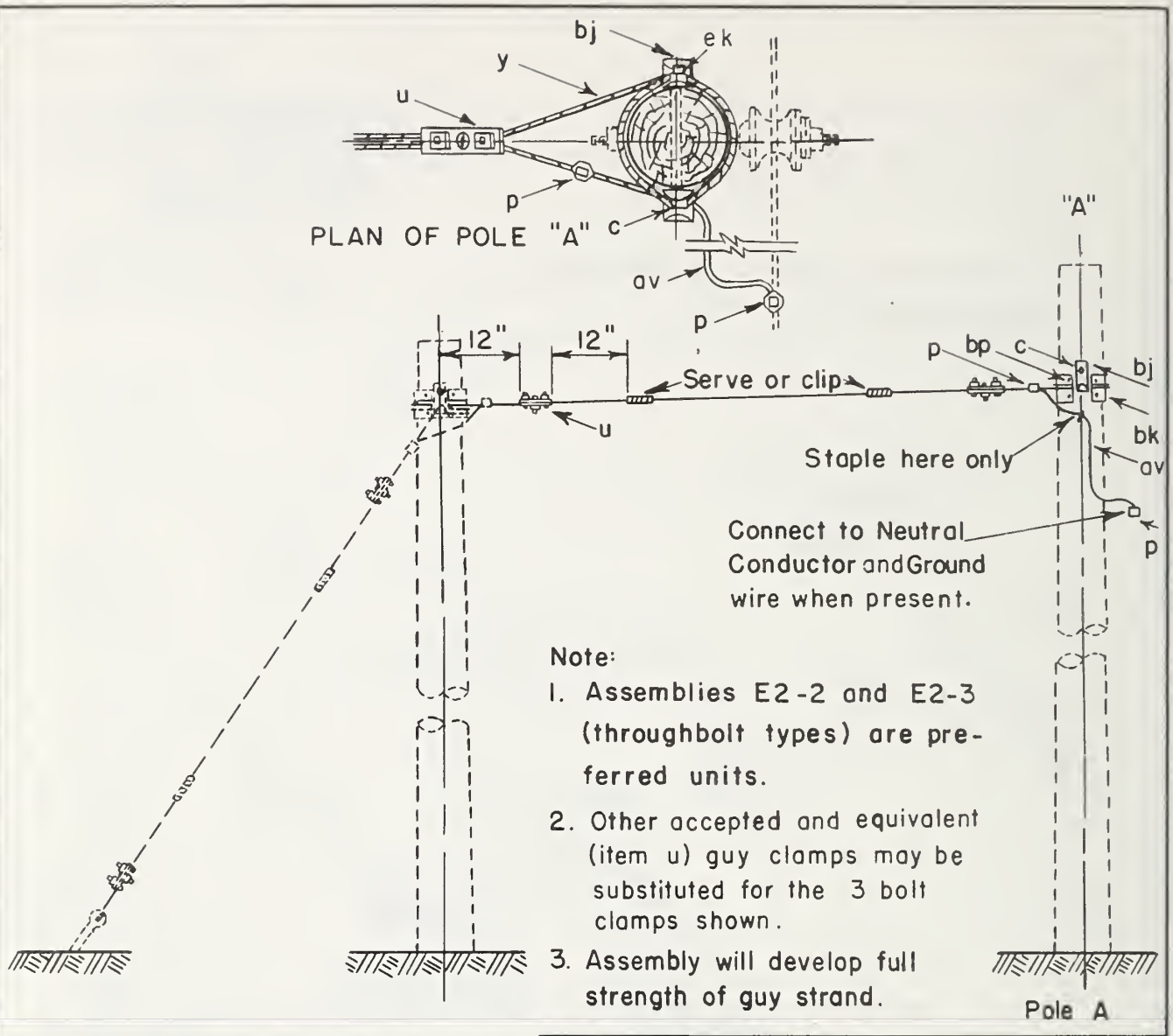
See guide drawings M30-1 and M30-2.

ITEM	MATERIAL	ASSEMBLY UNIT	E3-2	E3-3	E3-10
					Guy Marker
			No. REQ'D	No. REQ'D	
c	Bolt, machine, 5/8" x req'd length		1	1	
p	Connectors, as req'd				
u	Clamp, guy		2-Heavy Duty	2-Heavy Duty	
y	Guy Wire, S-M, 7-strand Req'd length by		3/8"	7/16"	
av	Jumper, #4 stranded AL. alloy or equip.		as req'd	as req'd	
at	Guy Marker, 8' min. length				1
bj	Guy Hook, J		2	2	
bk	Guy Plate, 4" x 8", 14 gauge		2	2	
bp	Nail, 8 penny, galv.		8	8	
ck	Clamp, anchor rod bonding		1	1	
ek	Locknuts, as required				

12.5/7.2 kV
SINGLE DOWN GUY, WRAPPED TYPE

Apr., 1983

E3-2, E3-3, E3-10



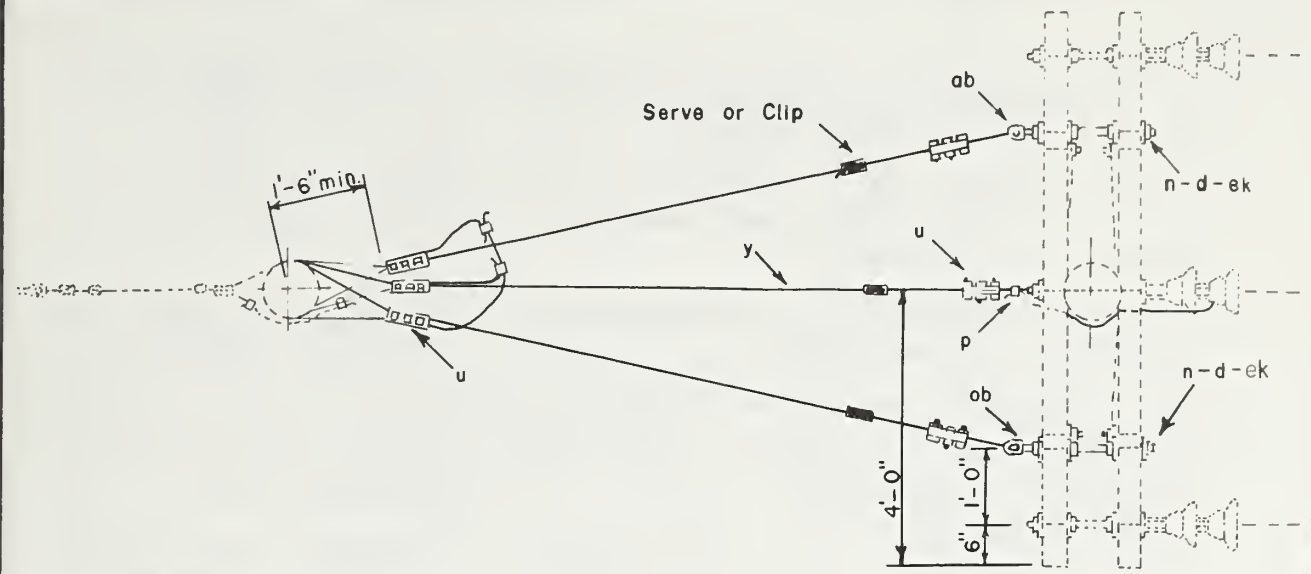
		ASSEMBLY UNIT			
		E4-2	E4-3		
		3/8" S.M.	7/16" S.M.		
ITEM	MATERIAL	No. Req'd	No. Req'd		
c	Bolt, machine, 5/8" x req'd length	1	1		
p	Connectors	as req'd	as req'd		
u	Deadend for guy strand	2	2		
y	Guy Wire, 7 strand	as req'd	as req'd		
av	Jumper, #4 stranded AL. alloy or equiv.	as req'd	as req'd		
bj	Guy Hook, J	2	2		
bk	Guy Plate, 4"x 8", 14 gauge	2	2		
bp	Nail, 8 penny, galv.	8	8		
ek	Locknuts	as req'd	as req'd		

12.5/7.2 kV

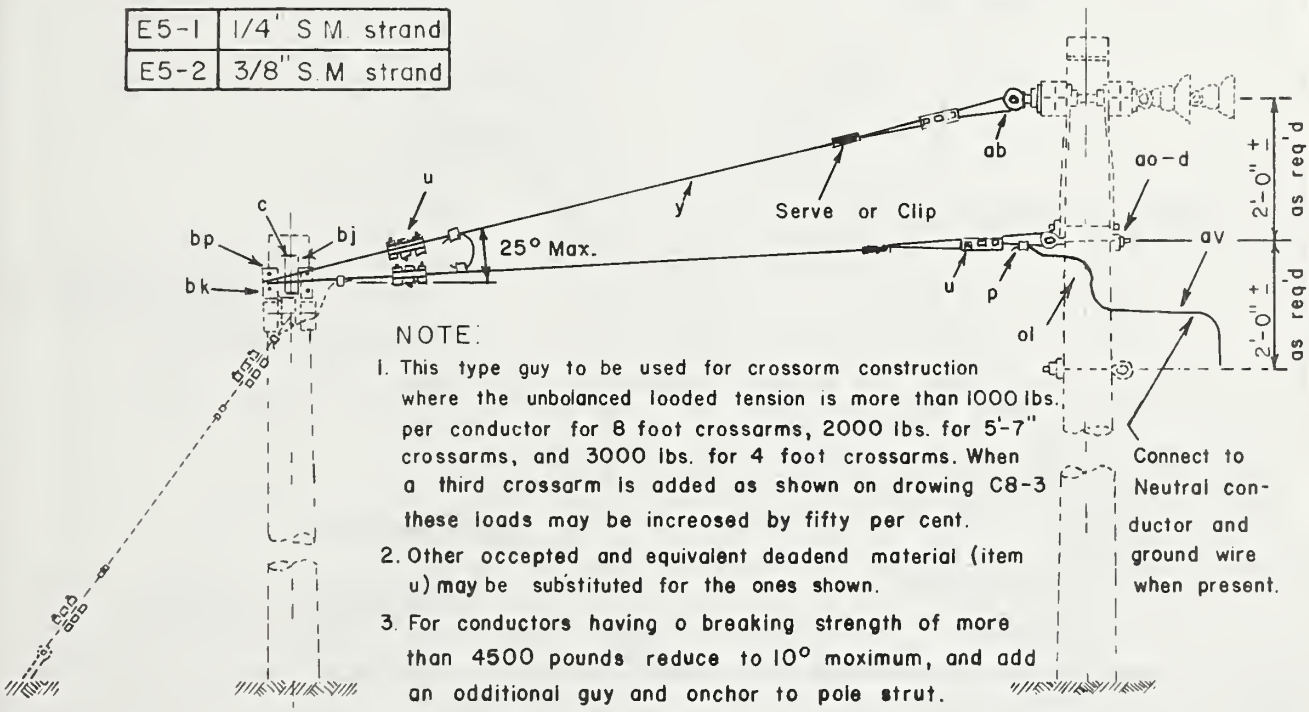
SINGLE OVERHEAD GUY, WRAPPED TYPE

Apr., 1983

E4-2, E4-3



E5-1	1/4" S.M. strand
E5-2	3/8" S.M. strand



NOTE:

1. This type guy to be used for crossorm construction where the unbolanced looded tension is more than 1000 lbs. per conductor for 8 foot crossarms, 2000 lbs. for 5'-7" crossarms, and 3000 lbs. for 4 foot crossarms. When a third crossarm is added as shown on drowing C8-3 these loads may be increosed by fifty per cent.
2. Other occepted and equivalent deadend material (item u) may be substituted for the ones shown.
3. For conductors having o breaking strength of more than 4500 pounds reduce to 10° moximum, and add an odditional guy and onchor to pole strut.
4. Assembly is limited to conductors with ultimote strength ratings below 9600 pounds.

ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
d	9	Washer, 2¼"x2¼"x 3/16", 13/16" hole		ab	2	Nut, thimble type eye, 5/8"	
n	2	Bolt, double arming, 5/8"x req'd. lg.		ao	1	Bolt, thimble type eye, 5/8"x req'd. lg.	
p		Connectors, as req'd.		av		Jumper, #4 Alum. alloy or equiv.	
u	6	Deadend for guy strand		al	1	Staple, ground wire	
y		Wire, guy, 7 strand, as req'd.		bk	2	Guy Plate, 4"x 8", 14 guage	
c	1	Bolt, machine, 5/8"x req'd. length		bj	2	Guy Hook, J	
ek		Locknuts, as required					
bp	8	Nail, 8 penny, galv.					

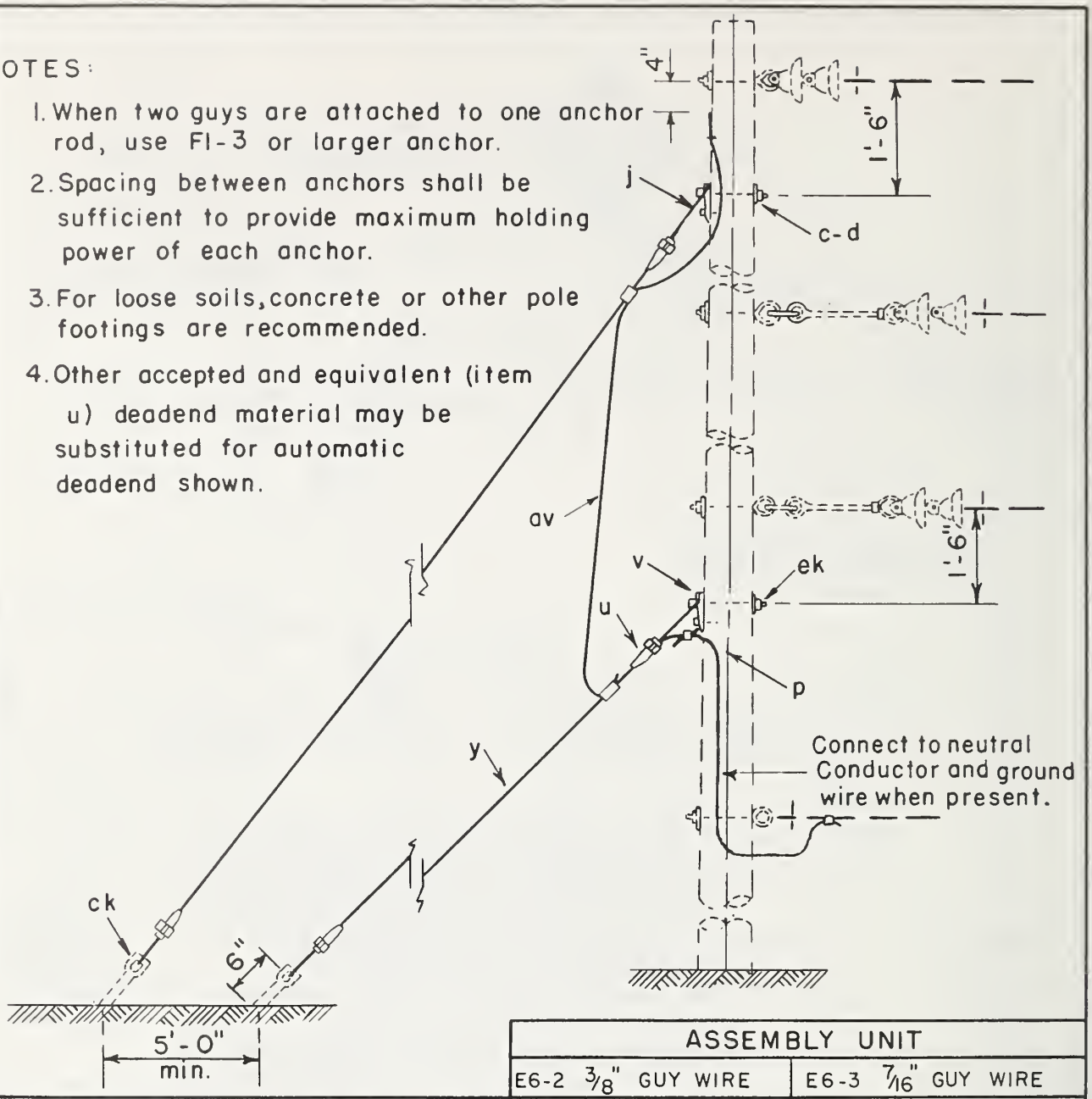
12.5/ 7.2 kV
DEADEND GUY
CROSSARM CONSTRUCTION

Apr., 1983

E5-1, E5-2

NOTES:

1. When two guys are attached to one anchor rod, use FI-3 or larger anchor.
2. Spacing between anchors shall be sufficient to provide maximum holding power of each anchor.
3. For loose soils, concrete or other pole footings are recommended.
4. Other accepted and equivalent (item u) deadend material may be substituted for automatic deadend shown.



ITEM	MATERIAL	ASSEMBLY UNIT E6-2 3/8" GUY WIRE No. Req'd	ASSEMBLY UNIT E6-3 7/16" GUY WIRE No. Req'd
c	Bolt, machine, 5/8" x req'd length	2	2
d	Washer, 3" x 3" x 5/16" curved		2
d	Washer, 2¼" x 2¼" x 3/16", 13/16" hole	2	
j	Screw, lag, 1/2" x 4"		2
p	Connectors, as req'd		
u	Deadend for guy strand	4	4
v	Guy attachment, Mall. Iron, Heavy Duty		2
v	Guy attachment, through bolt type	2	
y	Guy wire, S. M., 7-strand,	Req'd. Length	Req'd. Length
av	Jumpers, No. 4 stranded Al. alloy or equiv.	as required	as required
ck	Clamp, guy band, as req'd		
ek	Locknuts, as required		

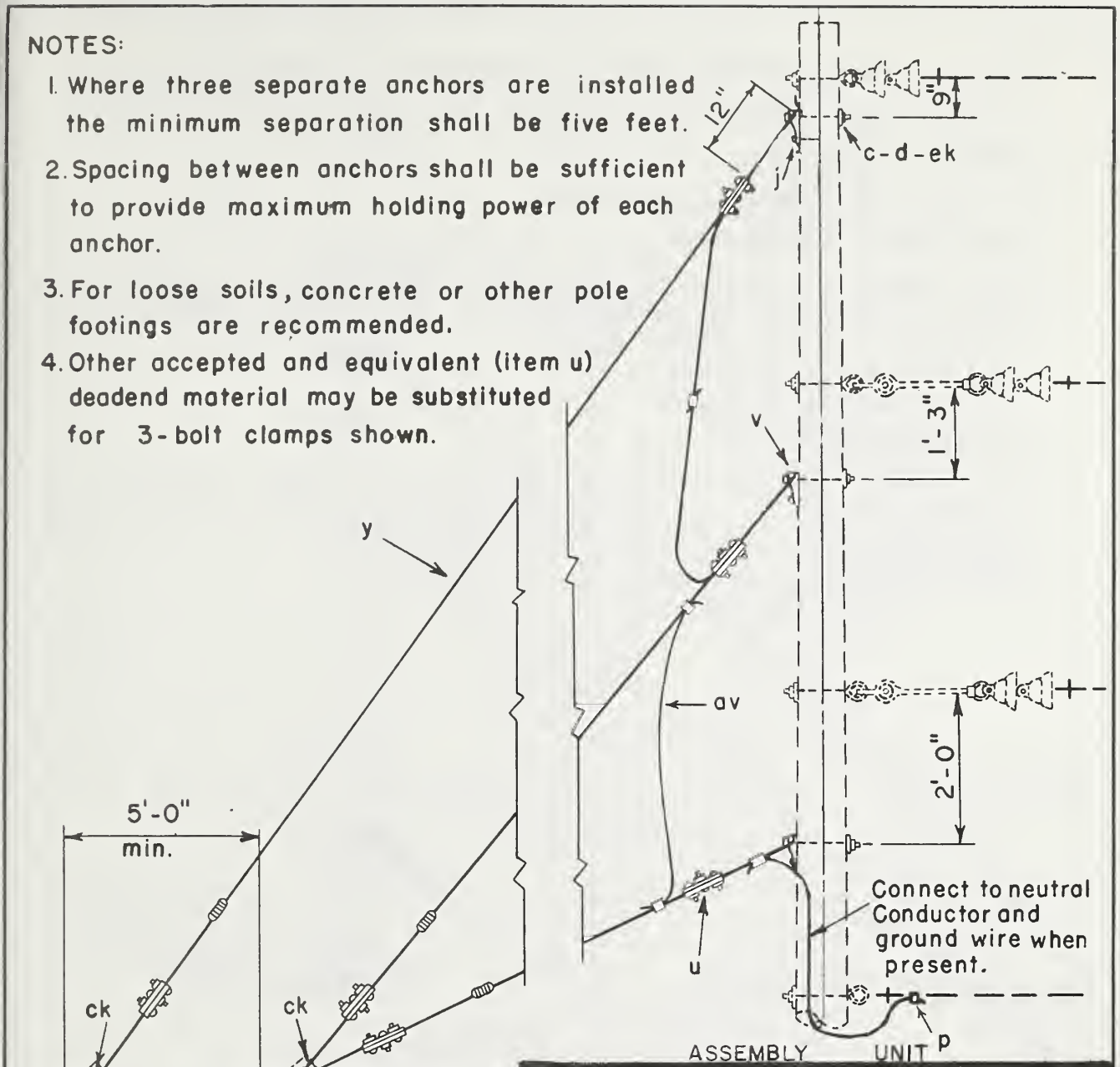
12.5/7.2 kV
DOUBLE DOWN GUY

Apr., 1983

E6-2, E6-3

NOTES:

1. Where three separate anchors are installed the minimum separation shall be five feet.
2. Spacing between anchors shall be sufficient to provide maximum holding power of each anchor.
3. For loose soils, concrete or other pole footings are recommended.
4. Other accepted and equivalent (item u) deadend material may be substituted for 3-bolt clamps shown.



ITEM	MATERIAL	E7-2 No. req'd	E7-3 No. req'd
c	Bolt, machine, 5/8" x req'd length	3	3
d	Washer, curved, 3"x3"x 5/16"	3	3
j	Screw, lag, 1/2" x 4"	3	3
p	Connectors	as req'd	as req'd
u	Deadend for guy strand	6	6
v	Guy attachment	3-5200 lbs.	3-8500 lbs.
y	Guy Wire, S.M., 7-strand req'd length by	3/8"	7/16"
av	Jumpers, No. 4 stranded Al. alloy or equiv	as req'd	as req'd
ck	Clamp, guy bond, as req'd.		
ek	Locknuts, as required		

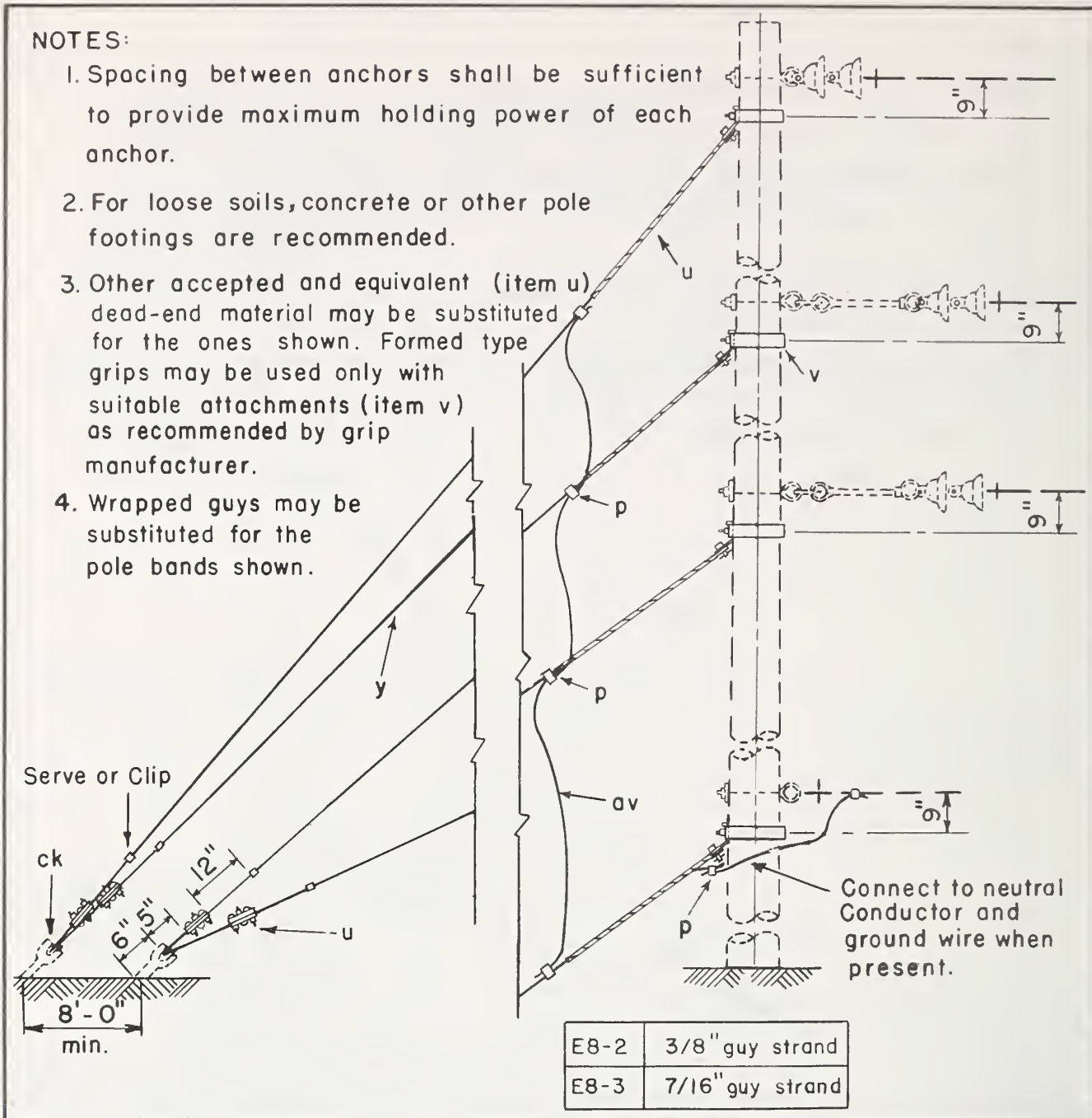
12.5/7.2 kV
THREE DOWN GUYS
(LARGE CONDUCTORS)

Apr., 1983

E7-2, E7-3

NOTES:

1. Spacing between anchors shall be sufficient to provide maximum holding power of each anchor.
2. For loose soils, concrete or other pole footings are recommended.
3. Other accepted and equivalent (item u) dead-end material may be substituted for the ones shown. Formed type grips may be used only with suitable attachments (item v) as recommended by grip manufacturer.
4. Wrapped guys may be substituted for the pole bands shown.



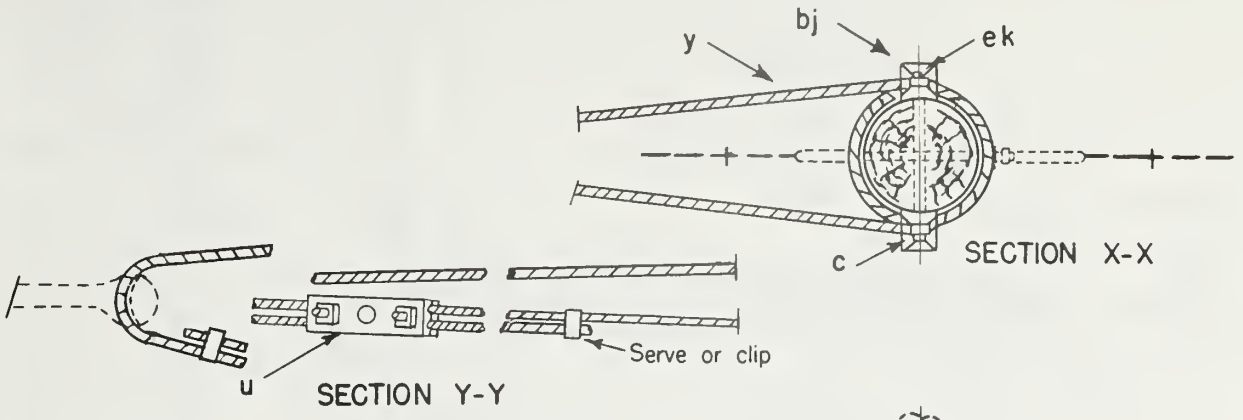
E8-2	3/8" guy strand
E8-3	7/16" guy strand

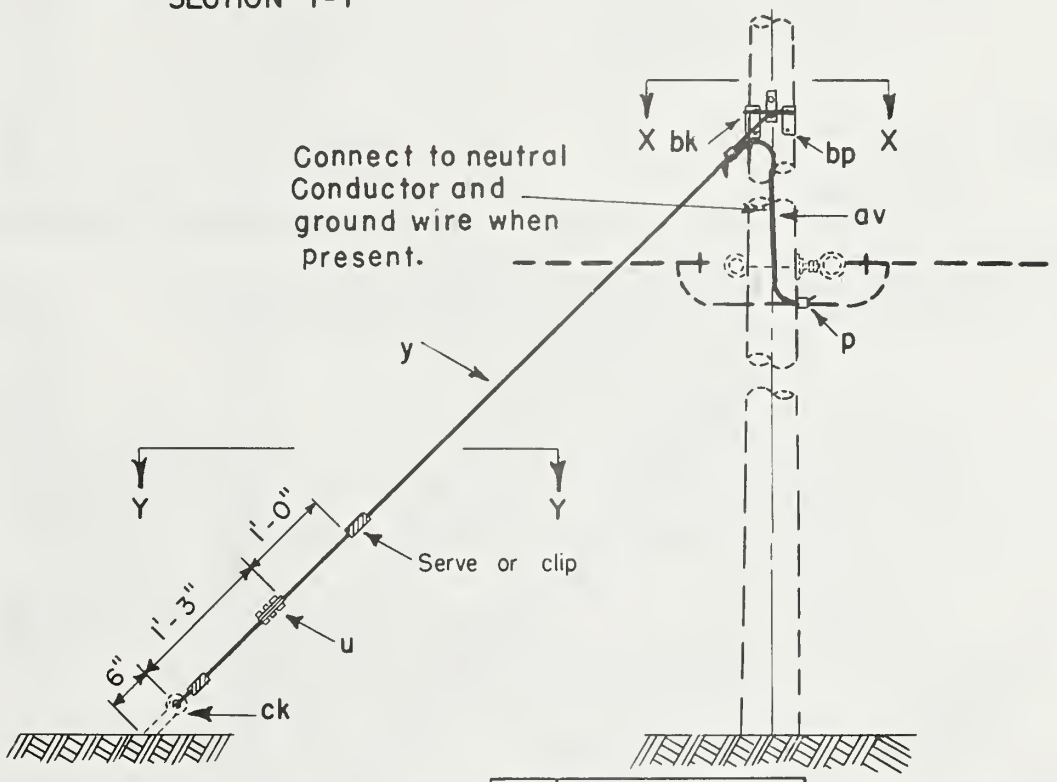
ITEM	MATERIAL	No. Required	
p	Connectors,	as req'd	
u	Deadend for guy strand	8	
v	Guy attachment, pole band type	4	
y	Guy Wire S.M. 7 strand	req'd length	
av	Jumpers, No. 4 stranded Al. alloy or equiv.	as required	
ck	Clamp, guy bonding	2	

12.5/7.2 kV
FOUR DOWN GUYS
(LARGE CONDUCTORS)

Apr., 1983

E8-2, E8-3





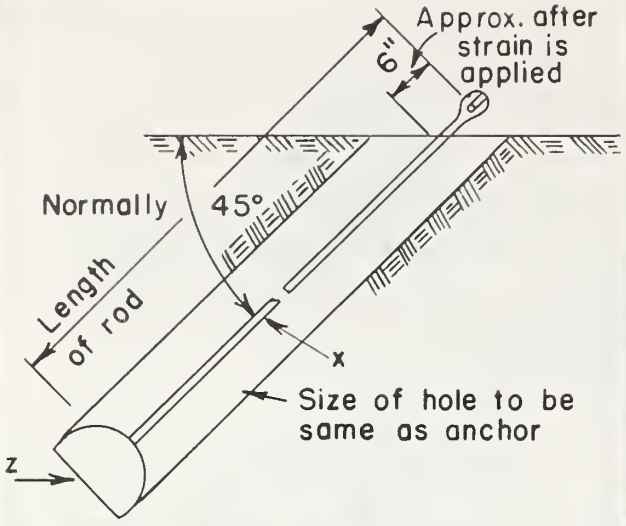
E11	1/4" guy strand
E12	3/8" guy strand

ITEM	MATERIAL	No. REQ'D.			
c	Bolt, machine, 5/8" x req'd. length	1			
u	Deadend for guy strand	1			
y	Guy wire, 7 strand, S.M.	Req'd. Length			
ck	Clamp, anchor rod bonding	1			
bj	Guy hook, J	2			
bk	Guy plate, 4" x 8", 14 guage	2			
bp	Nail, 8 penny, galv.	8			
av	Jumper, #4 stranded AL. alloy or equiv.				
p	Connectors, as req'd.				
ek	Locknuts, as required				

12.5/72 kV
SINGLE LOOP GUY, WRAPPED TYPE

Apr., 1983

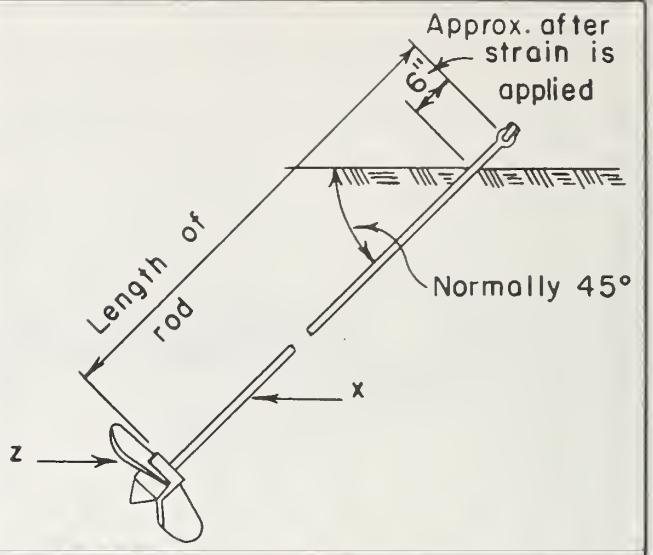
E11, E12



CONE

FI-1C, FI-2C, FI-3C

Rating is designated maximum holding power in hardpan and rocky soil.

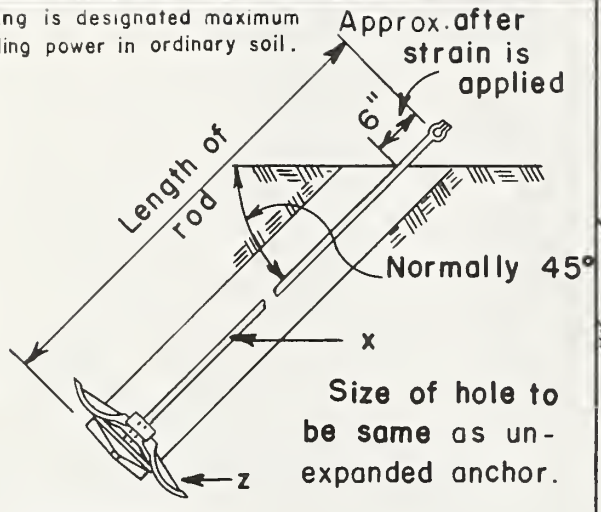


SCREW

FI-1S, FI-2S, FI-3S, FI-4S

Rating is designated maximum holding power in ordinary soil.

Rating is designated maximum holding power in ordinary soil.

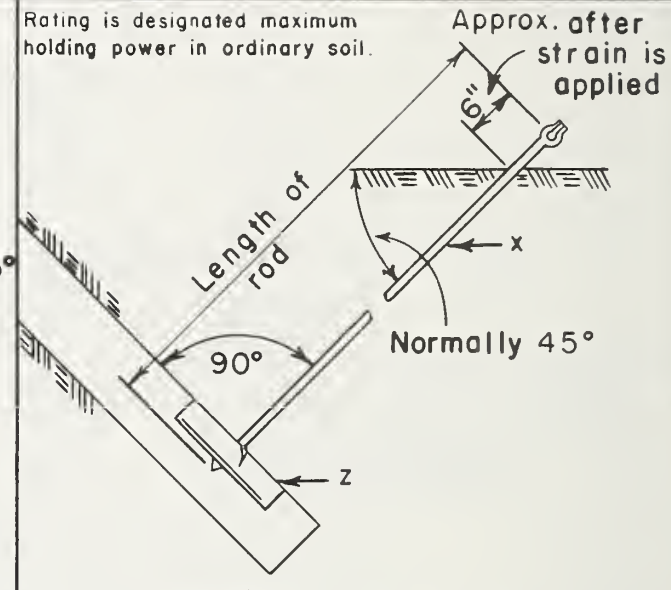


EXPANDING

FI-1, FI-2, FI-3, FI-4

Note: Projection of anchor rods above earth may be increased to a max. of 12" in cultivated fields or other locations where necessary to prevent burying of the rod eye.

Rating is designated maximum holding power in ordinary soil.



PLATE

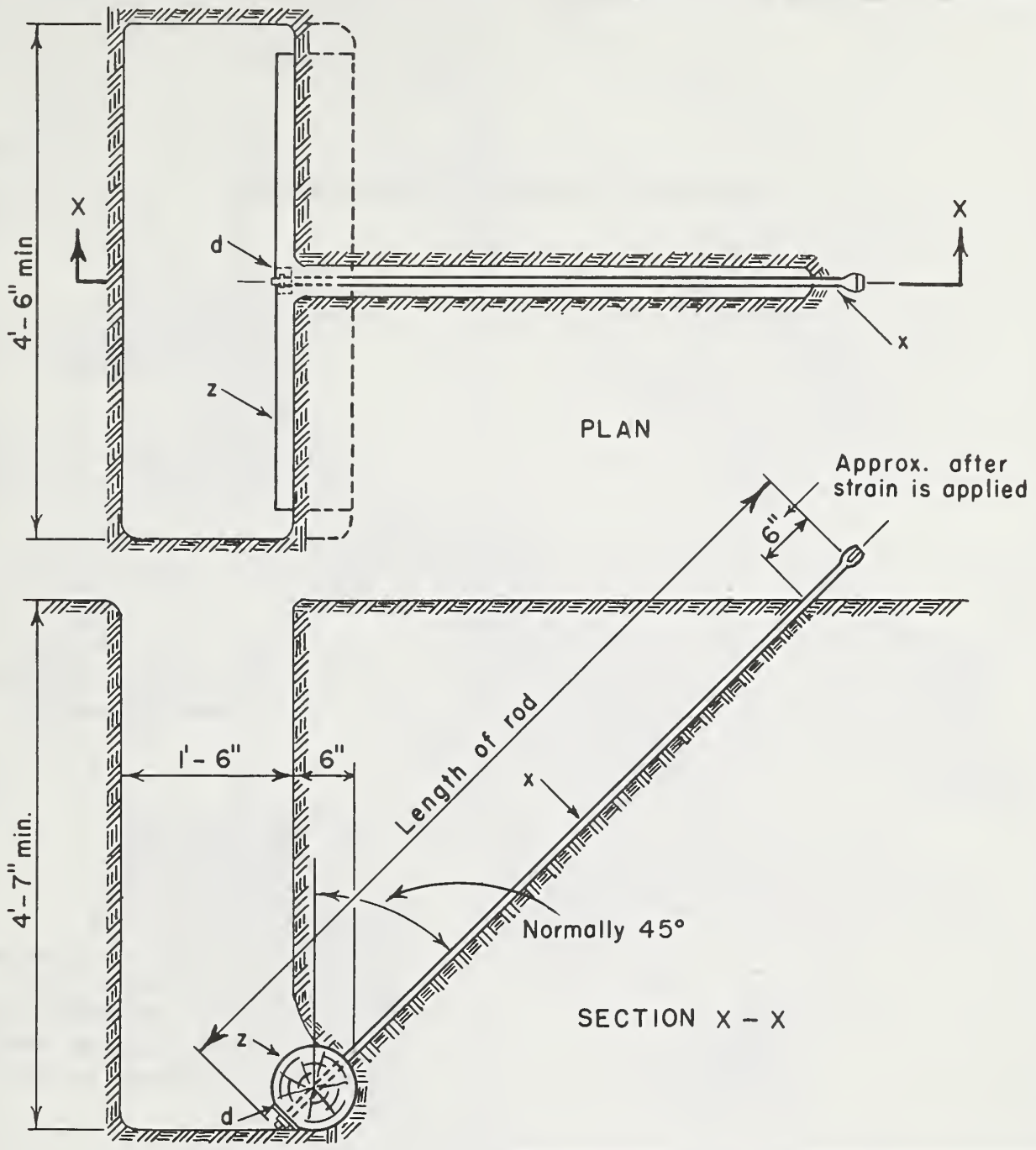
FI-1P, FI-2P, FI-3P, FI-4P

		ASSEMBLY UNIT							
		FI-1		FI-2		FI-3		FI-4	
Rating (pounds)		6000		8000		10,000		12,000	
ITEM	MATERIAL	NO.		NO.		NO.		NO.	
x	Rod, anchor, thimble eye	1	5/8" x 7'-0"	1	5/8" x 7'-0"				
x	Rod, anchor, twin eye					1	3/4" x 8'-0"	1	3/4" x 8'-0"
z	Anchor _____ type	1		1		1		1	

LINE ANCHOR ASSEMBLIES

Apr., 1983

FI-1 TO FI-4

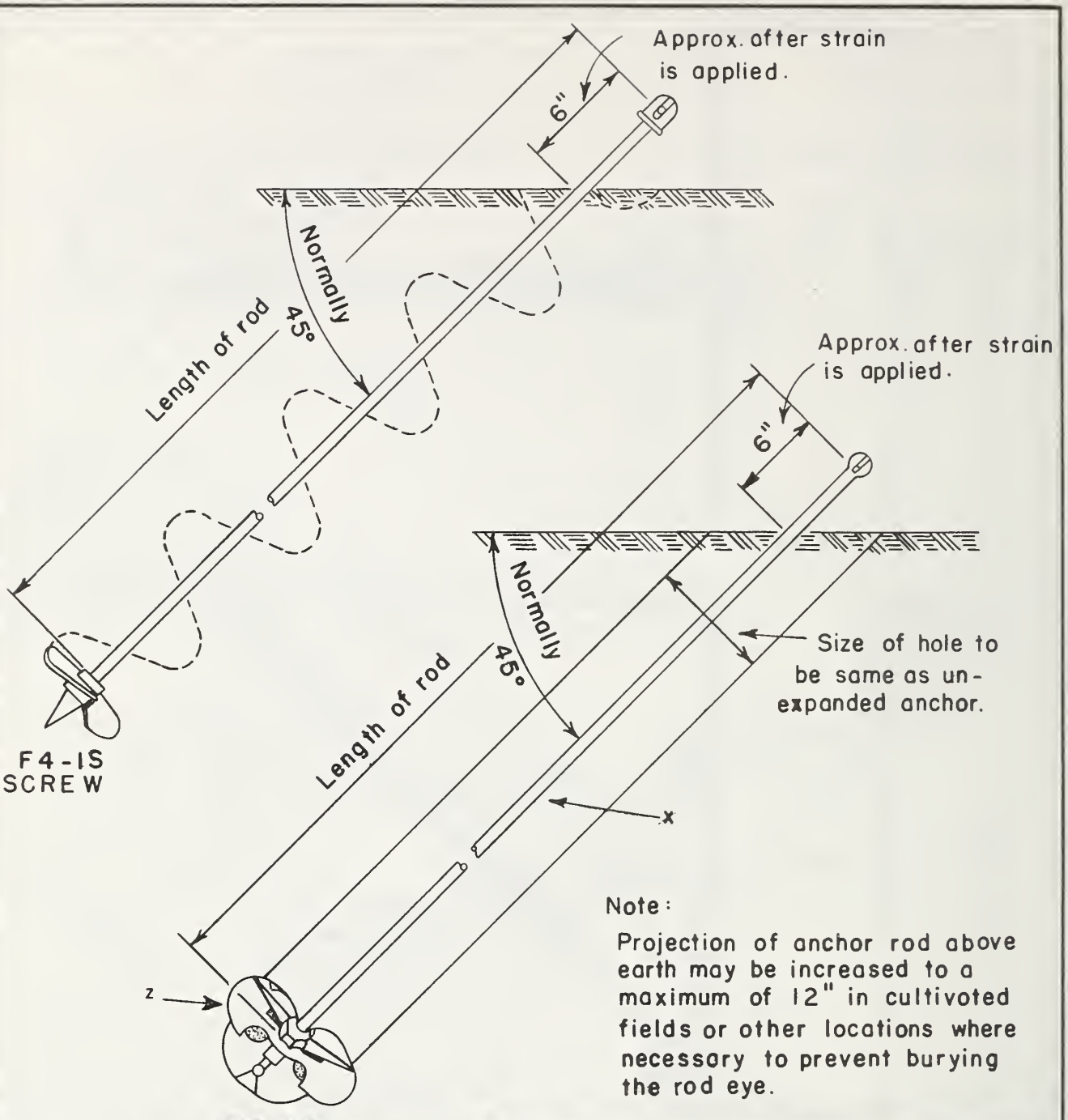


		ASSEMBLY UNIT							
		F2-1		F2-2		F2-3		F2-4	
ITEM	MATERIAL	NO.	TYPE	NO.	TYPE	NO.	TYPE	NO.	TYPE
d	Washer, 13/16" hole, (1 1/8" min. for F2-4)	1	4"x 4"x1/2"	1	4"x 4"x1/2"	1	4"x 4"x1/2"	1	4"x 4"x1/2"
x	Rod, anchor, thimble type eye	1	5/8"x 7'-0"	1	3/4"x8'-0"	1	3/4"x8'-0"	1	1"x9'-0"
z	Anchor, (creosoted log)	1	8"dia.x4'-0"	1	9"dia.x4'-6"	1	10"dia.x5'-0"	1	12"dia.x5'-0"
	Designated maximum holding power in ordinary soil		8000#		10,000#		12,000#		16,000#

LOG ANCHOR ASSEMBLY

Apr., 1983

F2-1 TO F2-4



Note:

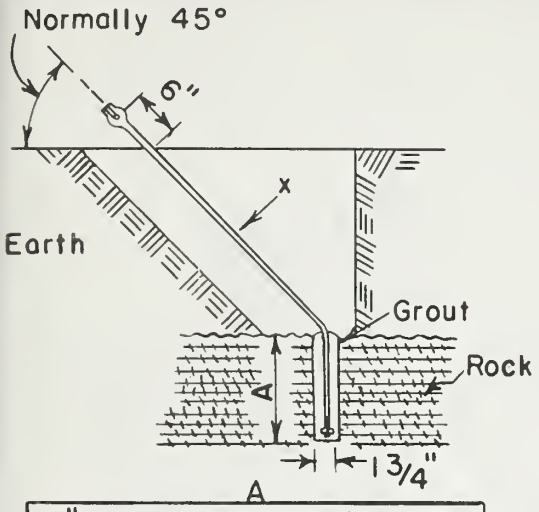
Projection of anchor rod above earth may be increased to a maximum of 12" in cultivoted fields or other locations where necessary to prevent burying the rod eye.

		ASSEMBLY UNIT							
		F4-1S		F4-1E					
ITEM	MATERIAL	NO.		NO.					
x	Rod, anchor, thimble type eye			1	$\frac{5}{8}$"x6'-0"				
z	Anchor, service	1		1					
	Designated maximum holding power in sand		2500#		2500#				

SERVICE ANCHOR ASSEMBLY

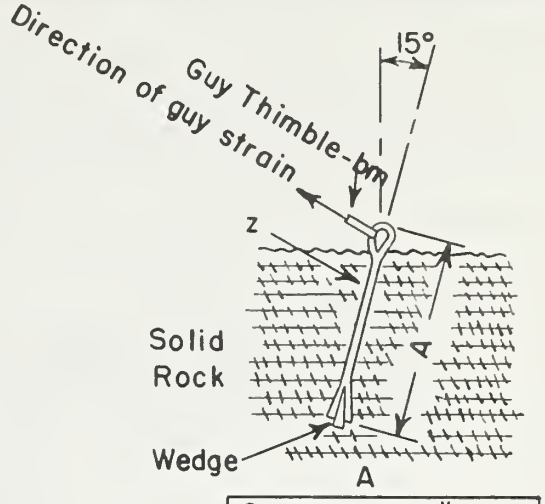
Apr., 1983

F4-1



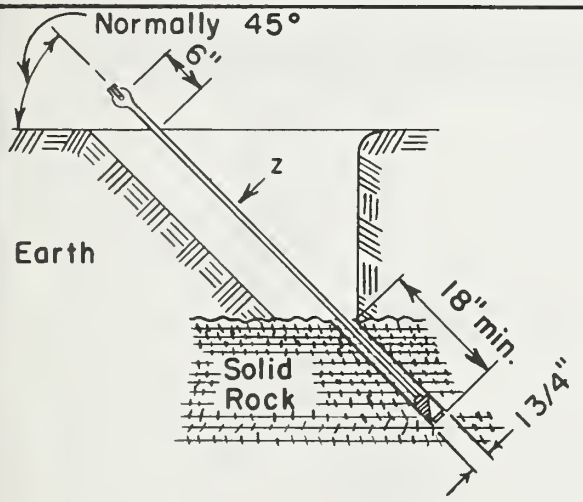
18" min. for sound solid rock
30" min. for stratified rock

F5 - 1



Guy Bolt 18"
Rock Anchor 15"

F5 - 2



F5 - 3

Notes:

1. Only one guy shall be attached to a rock anchor. Where more than one guy is required space anchors 2 ft. minimum and where practical they shall be in direct line with pole.

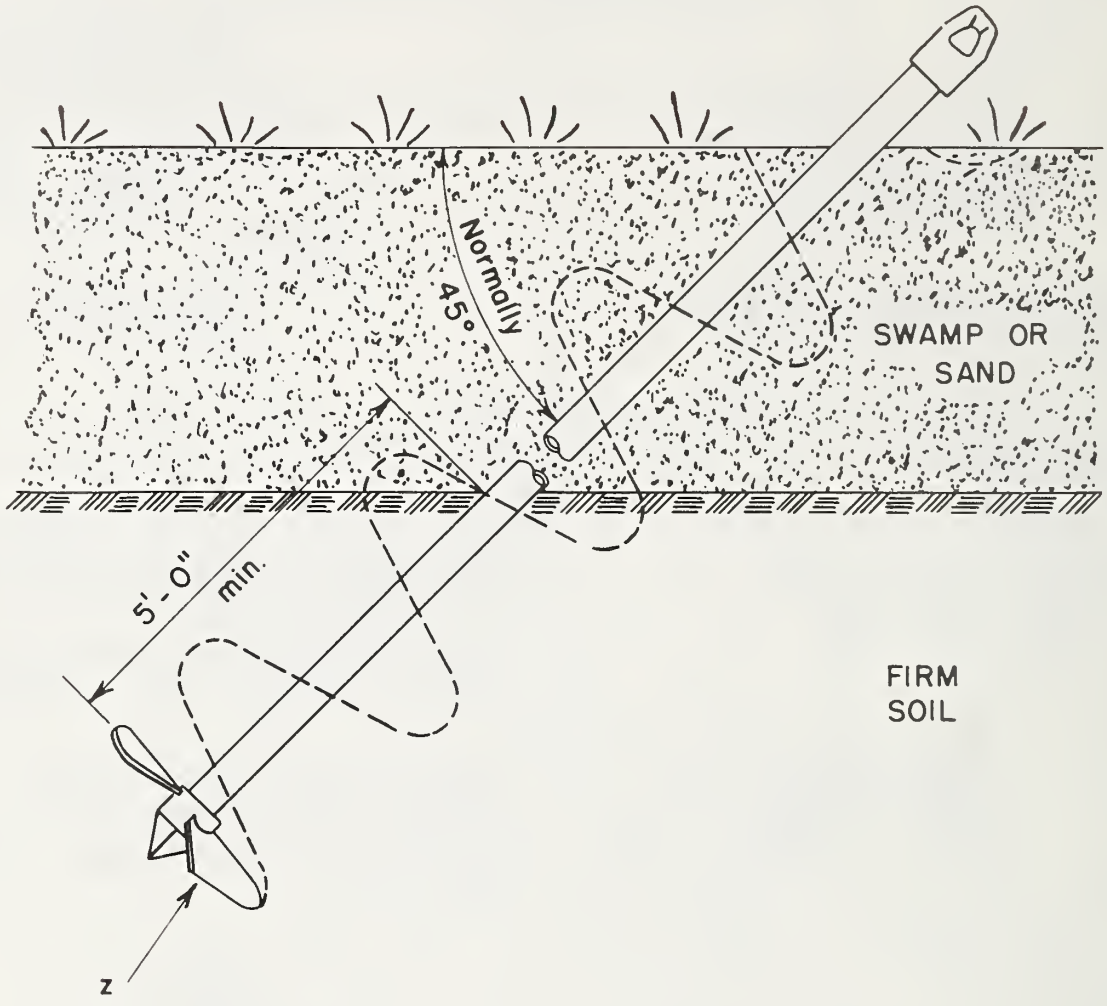
2. Do not anchor to any boulder measuring less than 5ft. in two directions at right angles to each other.

		ASSEMBLY UNIT			
		F5 - 1	F5 - 2	F5 - 3	
ITEM	MATERIAL	No. REQ'D	No. REQ'D	No. REQ'D	
x	Rod, anchor, thimble eye	1			
z	Anchor, rock		1	1	
bm	Thimble, guy		1		

ROCK ANCHOR ASSEMBLIES

Apr., 1983

F5-1, F5-2, F5-3

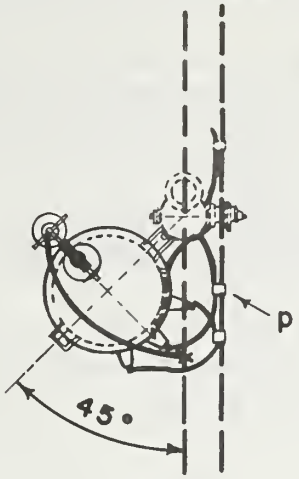


		ASSEMBLY UNIT							
		F6-1		F6-2		F6-3			
ITEM	MATERIAL	NO.	TYPE	NO.	TYPE	NO.	TYPE	NO.	TYPE
z	Anchor, swamp	1	10"	1	12"	1	15"		
	Designated maximum holding power		6000#		8000#		10,000#		
	Nut, thimble type eye	1		1		1			
	Pipe, galvonized, as req'd								

SWAMP ANCHOR ASSEMBLY

Apr., 1983

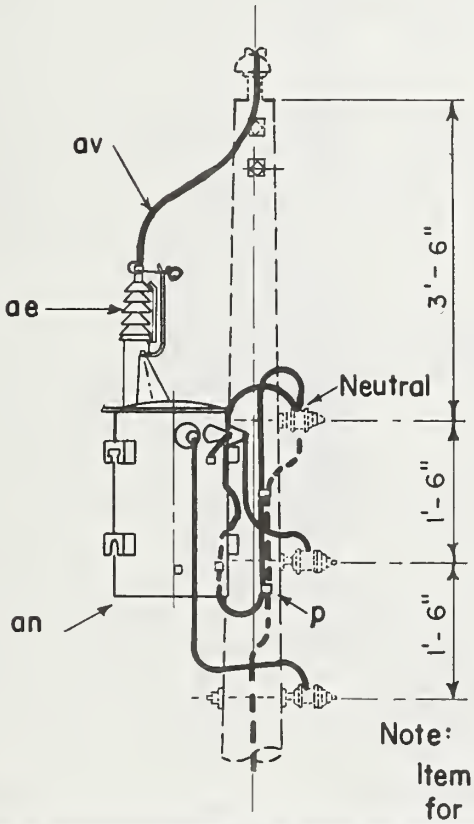
F6-1, F6-2, F6-3

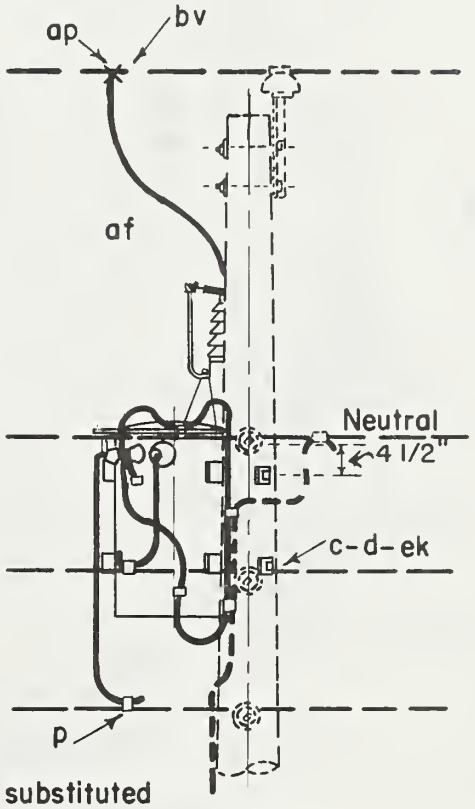


PLAN

Notes:

1. Designate G9 for conventional transformer with tank mounted cutout and arrester, G65 for transformer with double gap and internal fuse, G105 for self protected transformer.
2. See guide drawings for details of transformer secondary and service connections.
3. Do not disconnect transformer neutral without first disconnecting primary.





Note:
Item ax may be substituted for items ae and af.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	2	Bolt, machine, 5/8" x req'd. length	an	1	Transformer
d	2	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	ap	1	Clamp, hot line, tap assembly
p		Connectors, as required	av		Jumpers, stranded, as required
ae		Surge arrester (G9 only)	bv	1	Rods, armor
af		Cutout, fuse, open link (G9 only)	ek		Locknuts, as req'd.

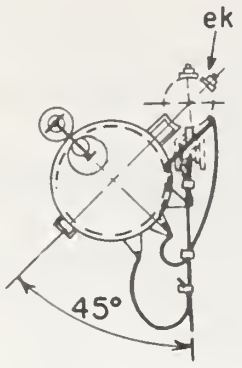
12.5/7.2 kV
SINGLE PHASE TRANSFORMER
AT 1-PHASE TANGENT

Apr., 1983

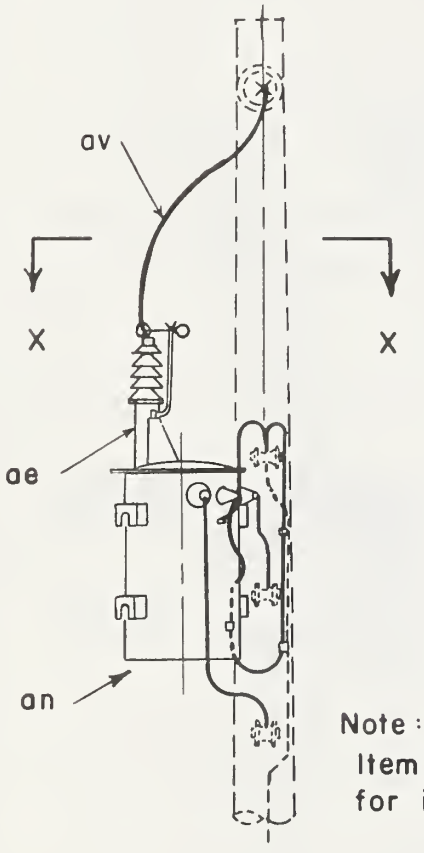
G9-,G65-,G105-

Notes:

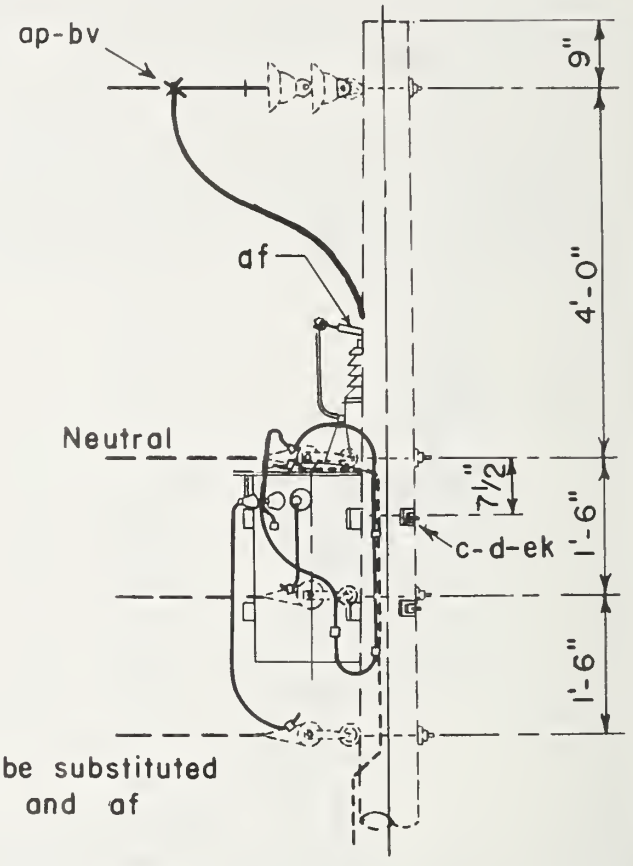
1. Designate G10 for conventional transformer with tank mounted cutout and arrester, G66 for transformer with double gaps and internal fuse, G106 for self protected transformer.
2. See guide drawings for details of transformer secondary and service connections.
3. Do not disconnect transformer neutral without first disconnecting primary.



SECTION X-X



Note:
Item ax may be substituted for items ae and af



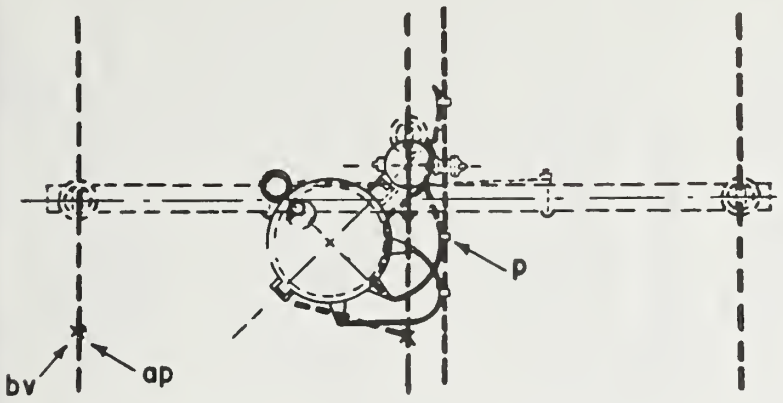
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
c	2	Bolt, machine, 5/8" x req'd length		an	1	Transformer	
d	2	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		ap	1	Clamp, hot line, tap assembly	
p		Connectors, as required		av		Jumpers, stranded, as required	
ae	1	Surge arrester (G10 only)		bv	1	Rods, armor	
af	1	Cutout, fuse, open link (G10 only)		ek		Locknuts, as req'd	

12.5/7.2 kV
SINGLE PHASE TRANSFORMER
AT DEADEND

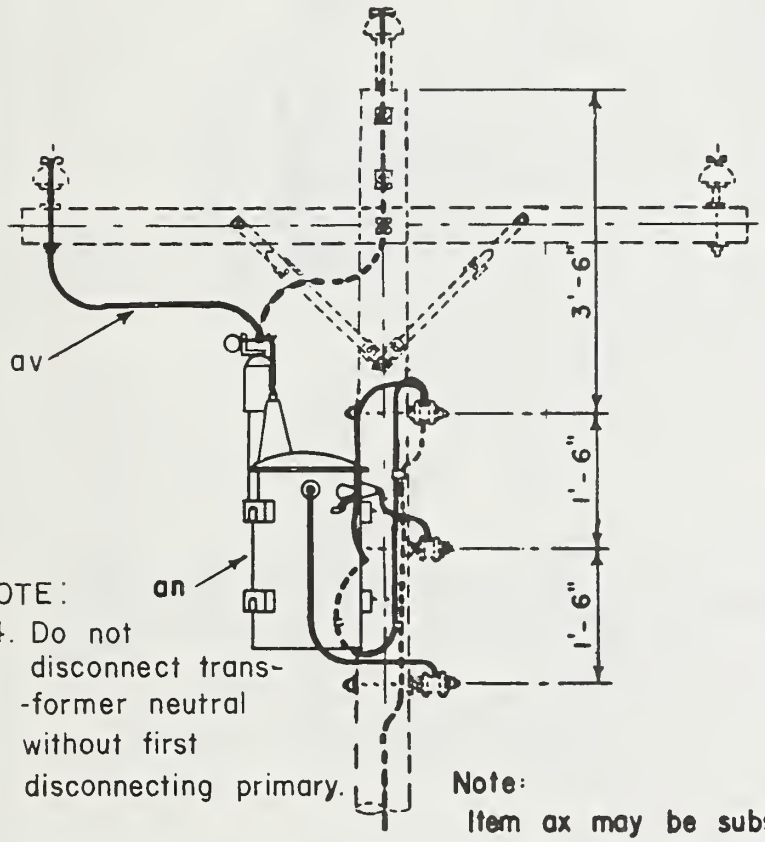
Apr., 1983

G10-,G66-,G106-

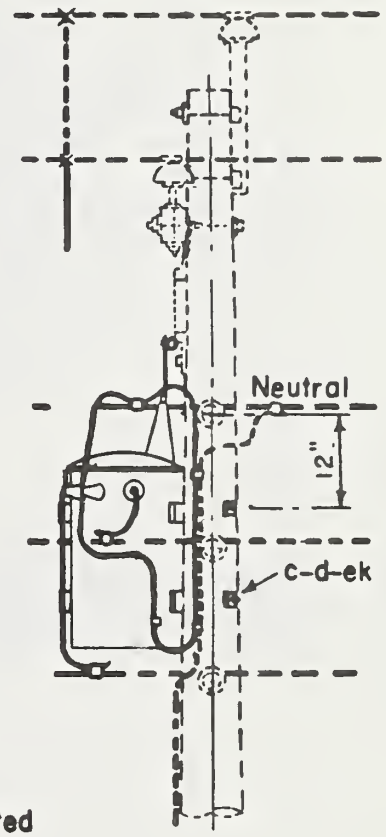
Notes: 1. Designate G39 for conventional transformer with tank mounted cutout and arrester, G67 for transformer with double gap and internal fuse and G136 for self protected transformer.
2. See guide drawings for details of transformer secondary and service connections.
3. Reverse for connection to other outside phase.



PLAN



NOTE:
4. Do not disconnect trans--former neutral without first disconnecting primary.



Note:
Item ax may be substituted for items ae and af.

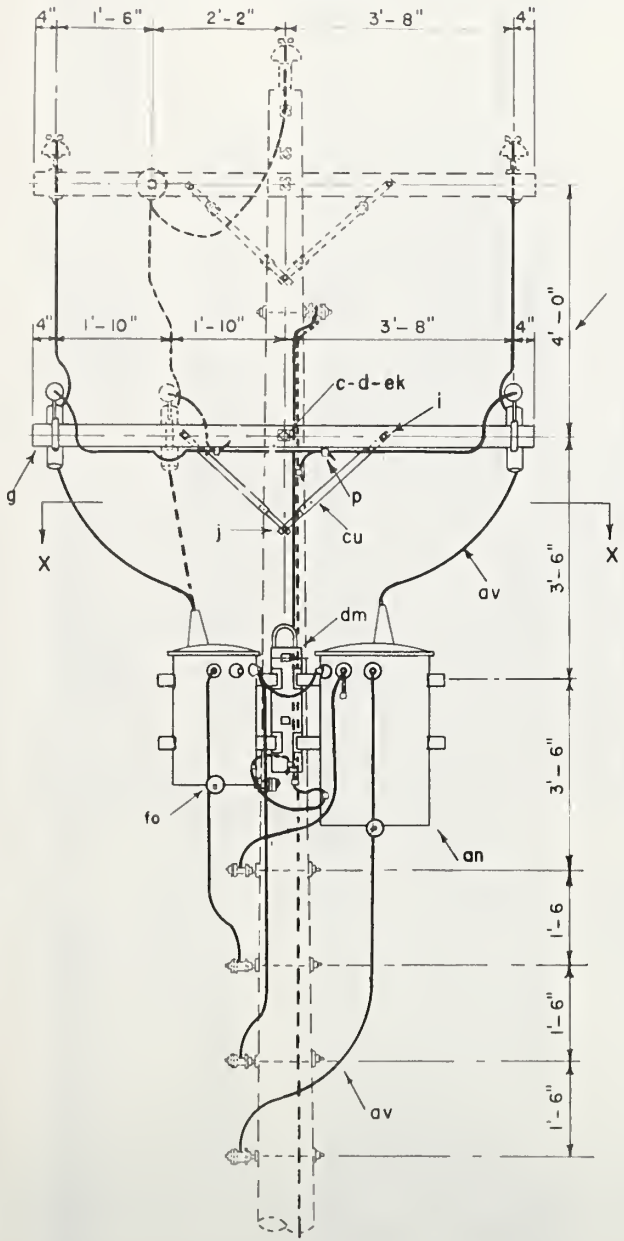
ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	2	Bolt, machine, 5/8" x req'd. length	av		Jumpers, stranded, as required
d	2	Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole	af	1	Cutout, fuse, open link (G 39 only)
p		Connectors, as required	ae	1	Surge arrester (G 39 only)
an	1	Transformer	bv	1	Rods, armor
ap	1	Clamp, hot line, tap assembly	ek		Locknuts as required

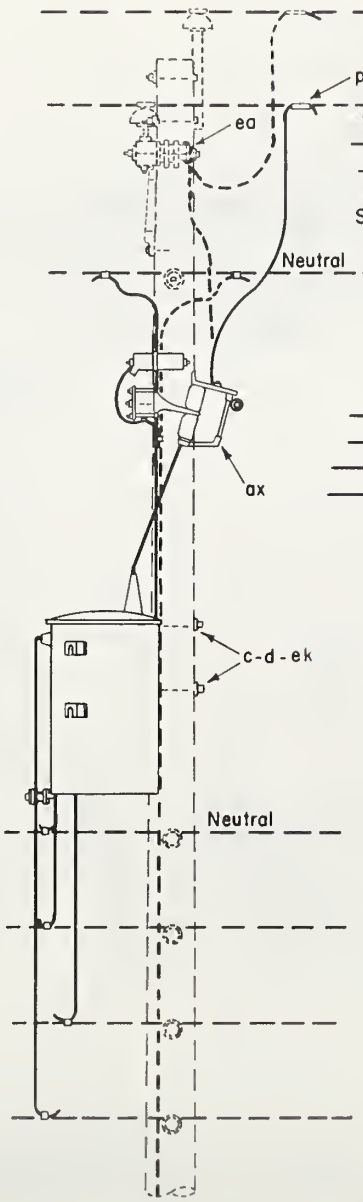
12.5/7.2 kV

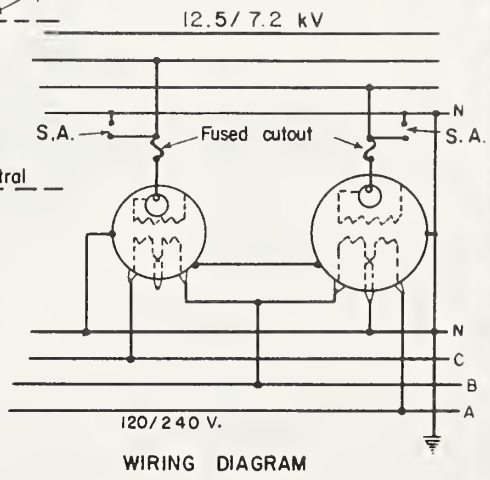
SINGLE PHASE TRANSFORMER ON THREE PHASE CIRCUIT

Apr., 1983

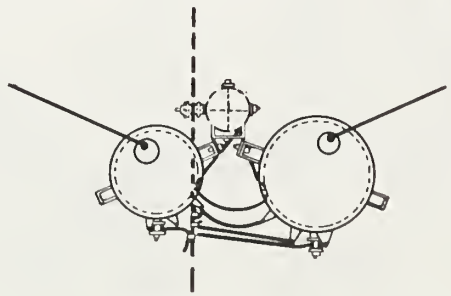
G39-,G67-,G136-







WIRING DIAGRAM



SECTION X-X

ITEM	NO.	MATERIAL
c	3	Bolt, machine, 5/8" x req'd. length
d	4	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"
i	2	Bolt, carriage, 3/8" x 4 1/2"
j	1	Screw, lag, 1/2" x 4"
p	2	Connectors, compression type
p		Connectors, as required
an	2	Transformer, conventional, 50 kVA max.
av		Jumper, secondary, weather-proof
av		Jumper, primary, bare, stranded, as req'd
ax	2	Cutout and arrester, combination
cu	2	Brace, wood, 28"
dm	1	Bracket, transformer
ea		Insulator, post type, with 7" stud
fo	3	Transformer, secondary bracket
ek		Locknuts, as required

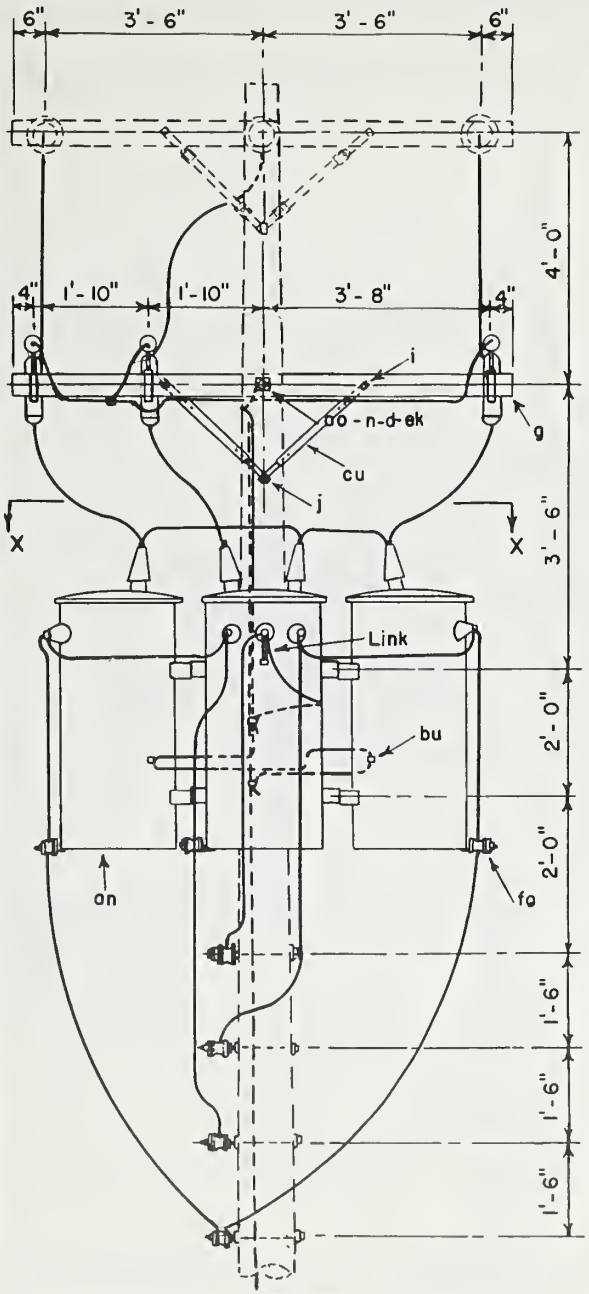
NOTE:

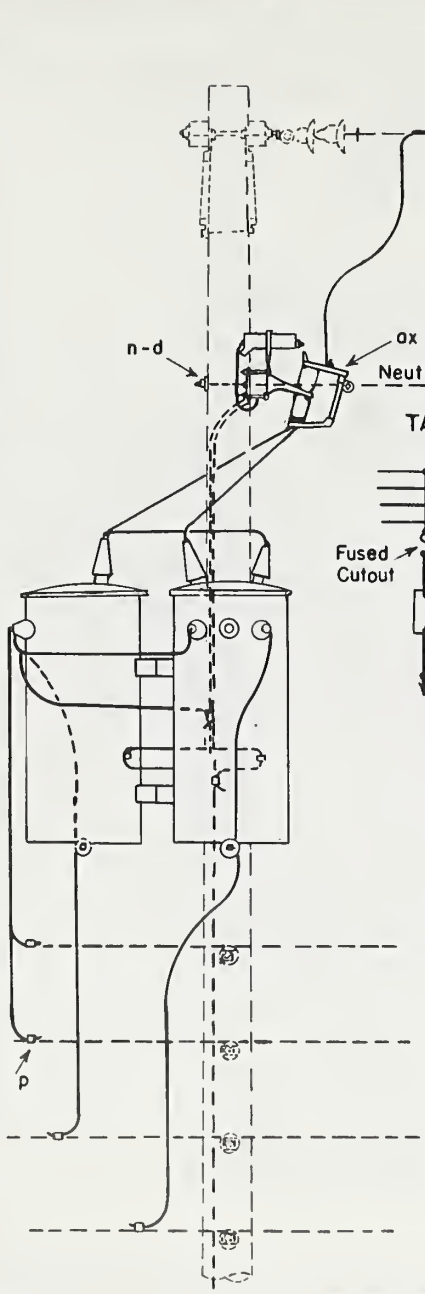
Do not disconnect transformer neutral without first disconnecting primary.

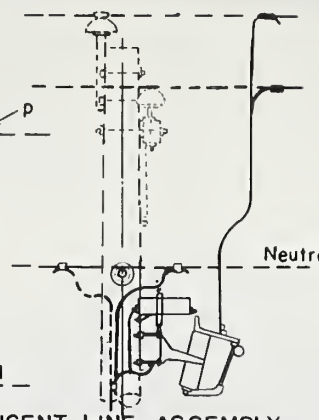
12.5/7.2 kV
TWO TRANSFORMERS, CLUSTER MOUNTED
OPEN WYE-OPEN DELTA FOR
120/240 VOLT POWER LOADS

Apr., 1983

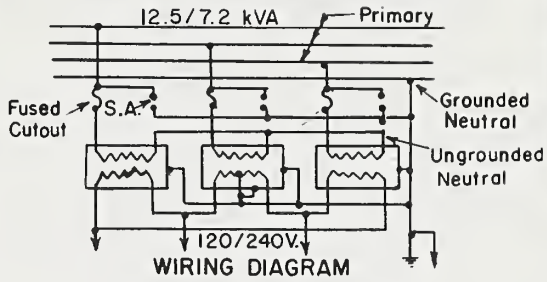
G210-



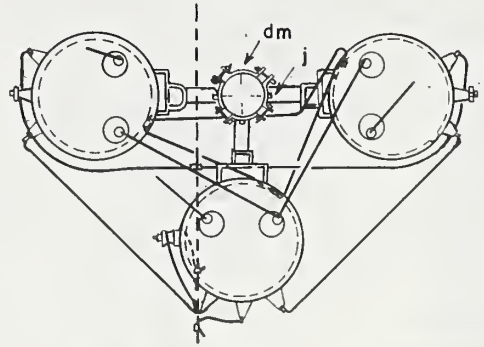




TANGENT LINE ASSEMBLY



WIRING DIAGRAM



SECTION X-X

Note:
For metering see drawing M8-6.

ITEM	NO. REQD	MATERIAL
d	2	Washer, 2¼" x 2¼" x 3/16" hole
g	1	Crossarm, 3 5/8" x 4 7/8" x 8'-0"
n	2	Bolt, carriage 3/8" x 4½"
j	4	Screw, lag ½" x 4"
p	3	Connector, compression type
p		Connectors, as required
an	3	Transformer, 100 kVA max conv.
av		Jumper, secondary, weather-proof
av		Jumper, primary, bare, stranded, as req'd
ax	3	Cutout and arrester, comb.
bu	4	Connector, transformer grounding *
cc	1	Deadend, assembly, neutral
cu	2	Brace, wood, 28"
dm		Bracket, transformer, cluster and
		adapter plates as req'd
	1	Link, grounding *
fo	3	Transformer secondary bracket
n	1	Bolt, double arming, 5/8" x reqd. length
ek		Locknuts, as required

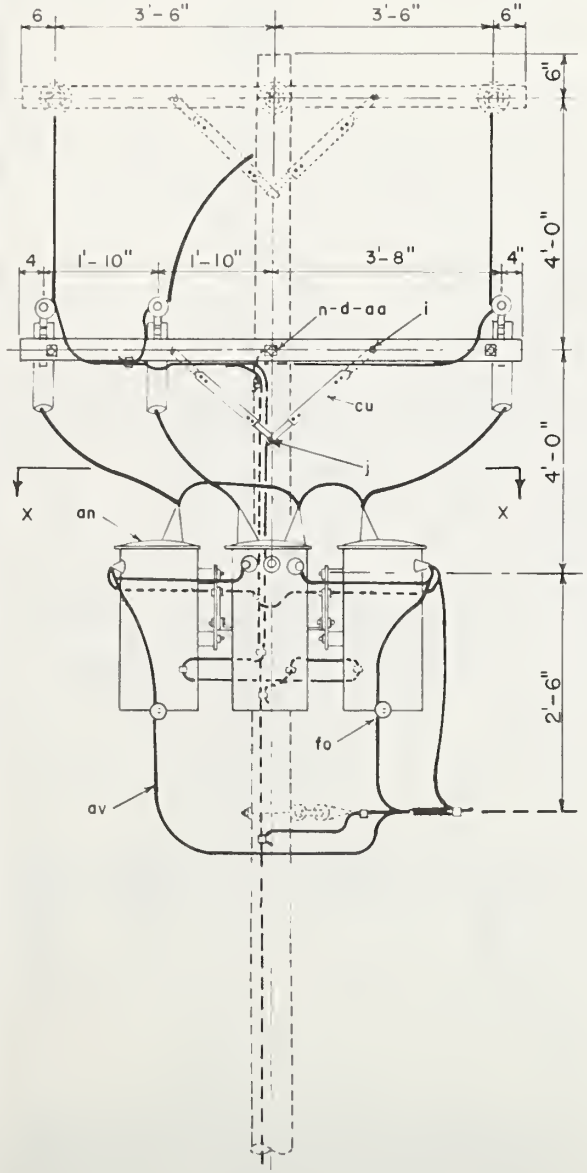
*Specify this item to be furnished by the transformer manufacturer.

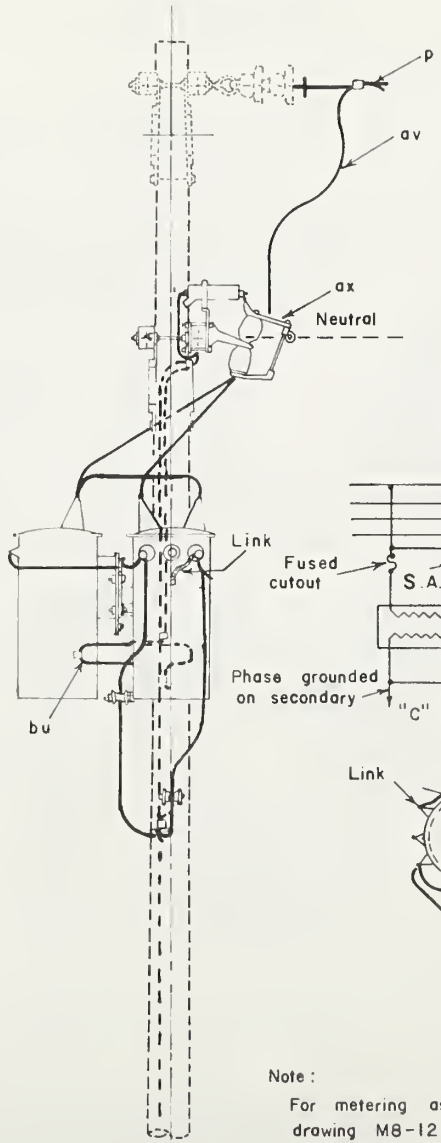
Notes:
1. All tanks to be grounded.
2. Secondary neutrals of all transformers except one shall be disconnected from tanks and not grounded.
3. When used for combined 1-phase and 3-phase load the transformer for the 1-phase load shall not be larger than twice the capacity of one of the others.
4. For transformers 50 kVA and smaller, use one cluster bracket with adapter plates and dimension as shown on G311.

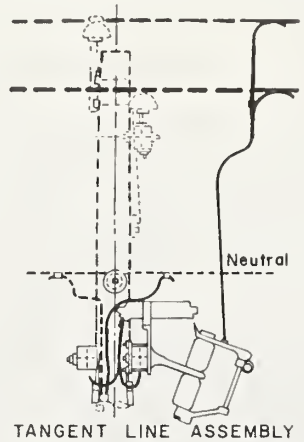
12.5/7.2 kV
THREE TRANSFORMERS CLUSTER MOUNTED
UNGROUNDED WYE-CENTER TAP GROUNDED DELTA
FOR 120/240 VOLT POWER LOADS

Apr., 1983

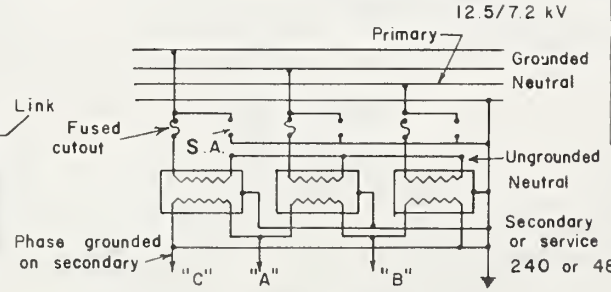
G310-



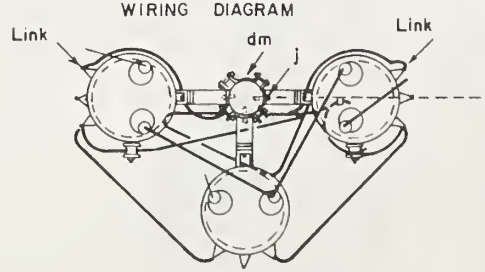




TANGENT LINE ASSEMBLY



WIRING DIAGRAM



SECTION X-X

ITEM	NO.	MATERIAL
d	2	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"
i	2	Bolt, carriage 3/8" x 4 "
j	4	Screw, lag, 1/2" x 4"
n	1	Bolt, double arming, 5/8" x req'd. length
p	3	Connectors, compression type
p		Connectors, as req'd.
aa	1	Eye nut
an	3	Transformer, 100 kVA max.
av		Jumper, bare, stranded, as req'd
av		Jumper, secondary, weather-proof
ax	3	Cutout and Arrester, combination
cu	2	Brace, wood, 28"
fo	2	Transformer secondary bracket
bu	3	Connector, transformer grounding *
dm		Bracket, transformer, cluster and adapter plates, as req'd
	2	Link, grounding
ek		Locknuts, as req'd.

* Specify these items to be furnished by the manufacturer.

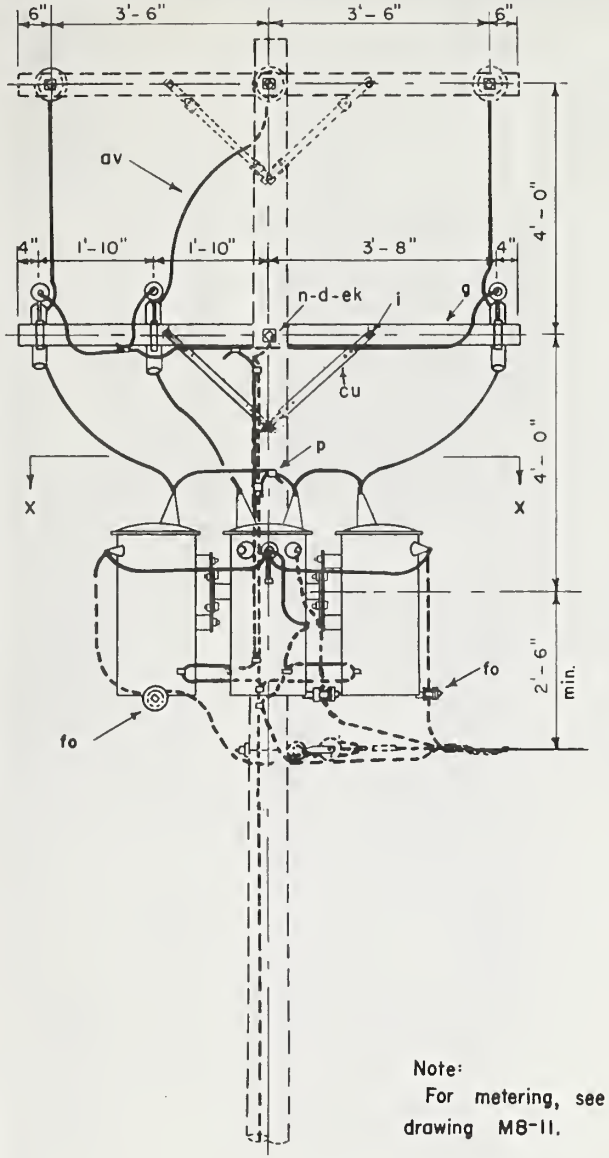
Notes.
1. All tanks to be grounded.
2. Secondary neutrals shall be disconnected from tanks and not grounded.
3. Grounded secondary phase wire must be identified throughout circuit run.
4. For transformers 75 kVA and larger use two cluster brackets and dimension as shown on G310.

Note:
For metering assembly, refer to drawing M8-12

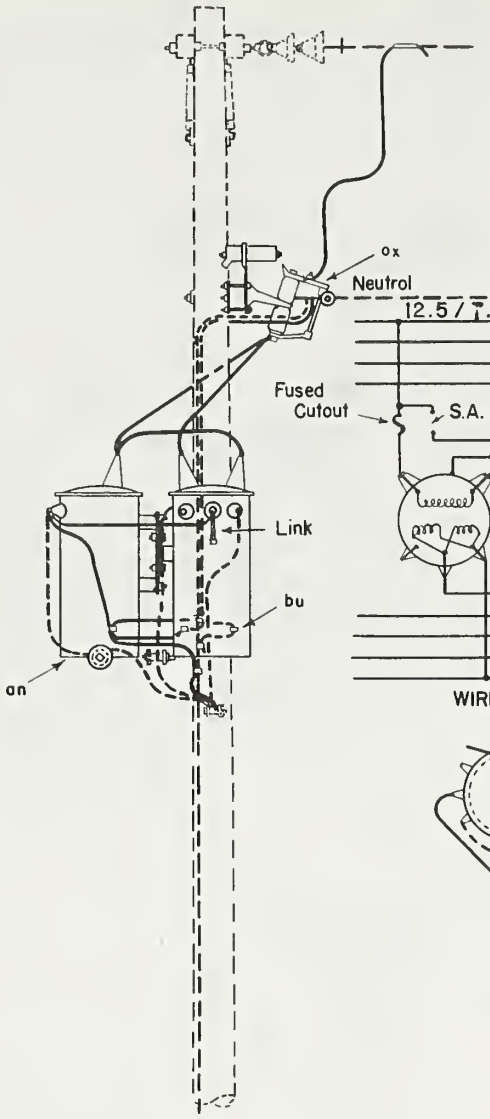
12.5/7.2 kV
THREE TRANSFORMERS, CLUSTER MOUNTED
UNGROUNDED WYE - CORNER GROUNDED DELTA
FOR 240 OR 480 V POWER LOADS

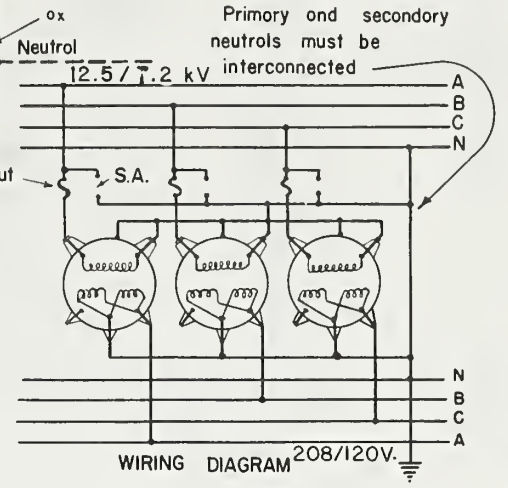
Apr., 1983

G311-

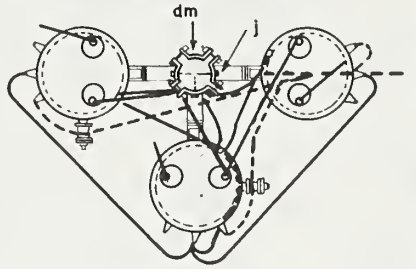


Note:
For metering, see drawing M8-11.





WIRING DIAGRAM 208/120V.



SECTION X-X

ITEM	NO.	MATERIAL
d	2	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
g	1	Crossorm, 35/8" x 45/8" x 8'-0"
i	2	Bolt, corrioge, 3/8" x 4 1/2"
j	4	Screw, log, 1/2" x 4"
n	1	Bolt, double, orming, 5/8" x req'd length
p	3	Connector, compression type
p		Connectors, os required
on	3	Tronsformer, 100 kVA max
ov		Jumper, secondory, weather-proof
ov		Jumper, pri. bare, stranded, as req'd
ox	3	Cutout ond orrester, combinotion
bu	3	Connector, transformer grounding *
cu	2	Broce, wood, 28"
dm		Brocket, transformer, cluster ond odopter
		plotes os required
fo	3	Tronsformer secondory brocket, insuloted
	3	Link grounding
ek		Locknuts, os required

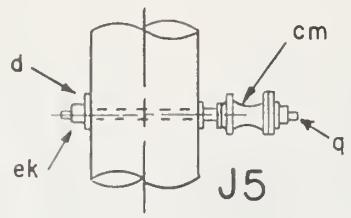
* Specify these items to be furnished by the monufocturer.

Notes:
1. For tronsformers 50 kVA ond longer, use two cluster brackets ond dimensions os shown on G310.
2. Single bushing tronsformers moy be used if desired. If used, do not disconnect tronsformer neutrol without first disconnecting primory.
3. Re-connect internal windings of secondory os shown.

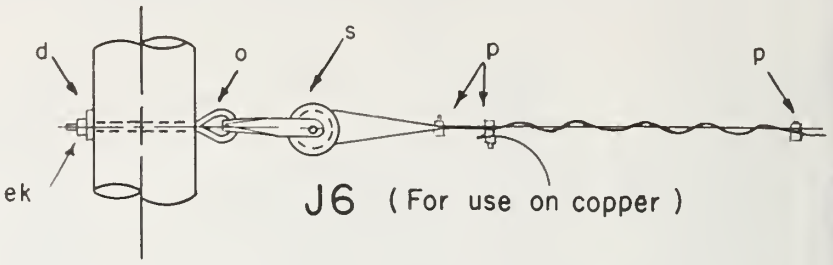
12.5/7.2 kV
THREE TRANSFORMERS, CLUSTER MOUNTED
4-WIRE GROUNDED WYE-GROUNDED WYE
FOR 208/120 VOLT POWER LOADS

Apr., 1983

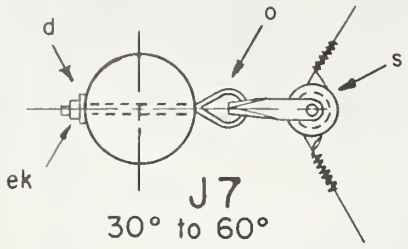
G312-



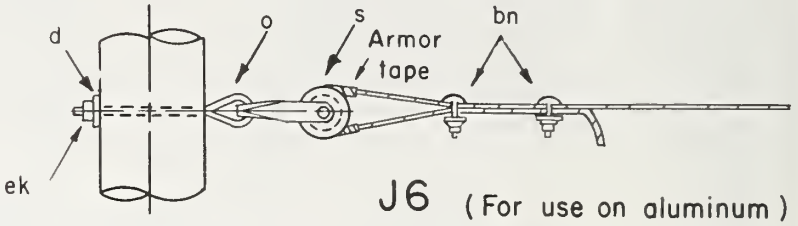
J5



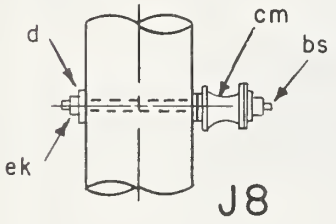
J6 (For use on copper)



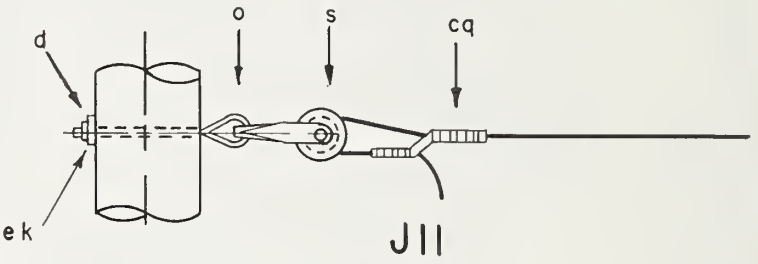
J7
30° to 60°



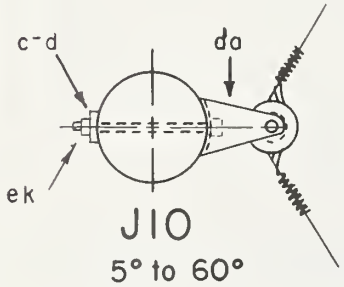
J6 (For use on aluminum)



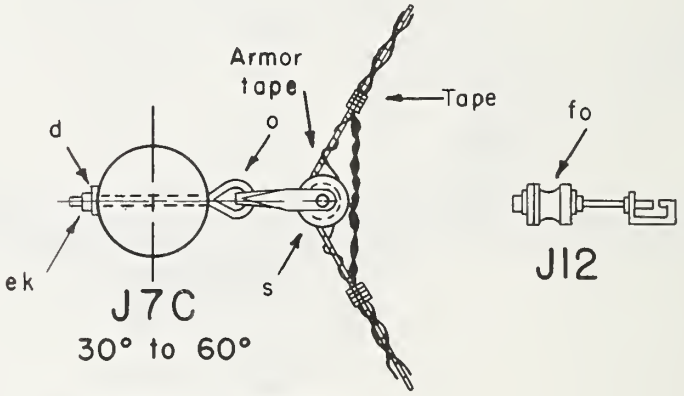
J8



J11



J10
5° to 60°



J7C
30° to 60°

J12

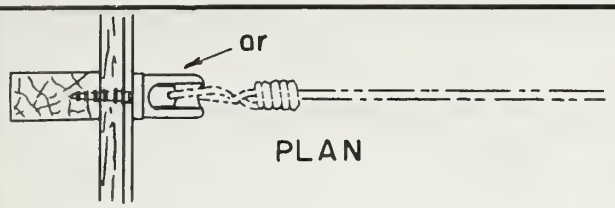
For use on Self Supporting
Service Cable

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL
c		Bolt, mochine, 5/8" x required length		bs		Bolt, single upset
d		Wosher, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		bn		Clamp, loop, deadend
o		Bolt, eye, 5/8" x required length		cq		Sleeve, offset, splicing
p		Connectors, as required		da		Bracket, insulated
q		Bolt, double upset,		fo		Transformer secondary bracket
s		Clevis, secondary, swinging, insulated		ek		Locknuts as required
cm		Insulator, spool				

SECONDARY ASSEMBLIES

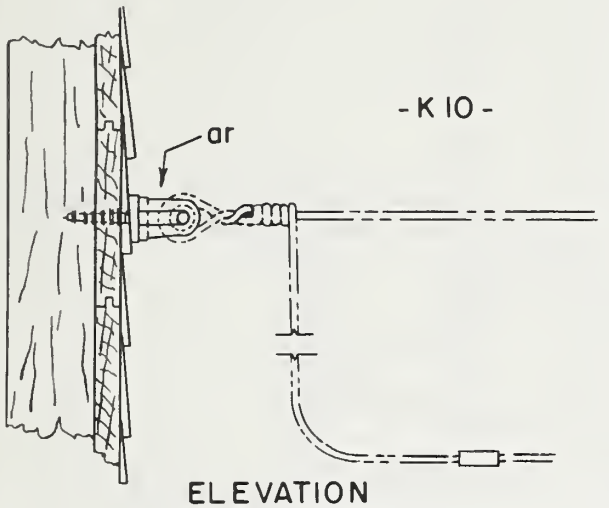
Apr., 1983

J5 to J12

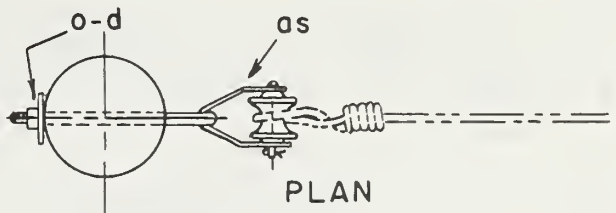


PLAN

-K10-

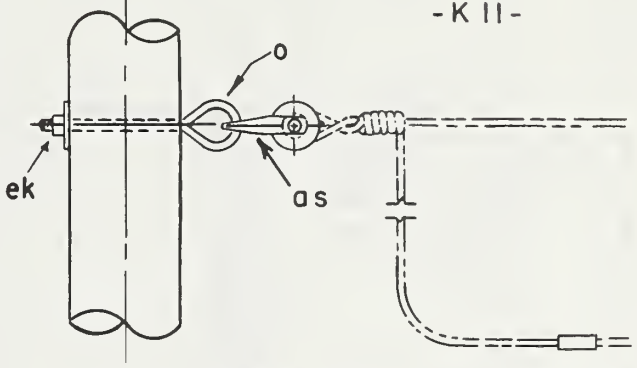


ELEVATION

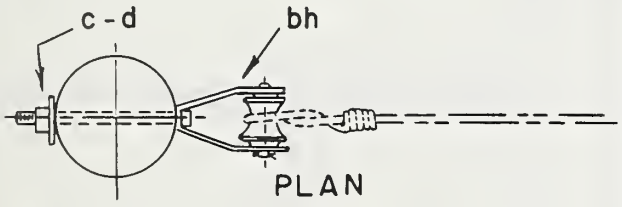


PLAN

-K11-

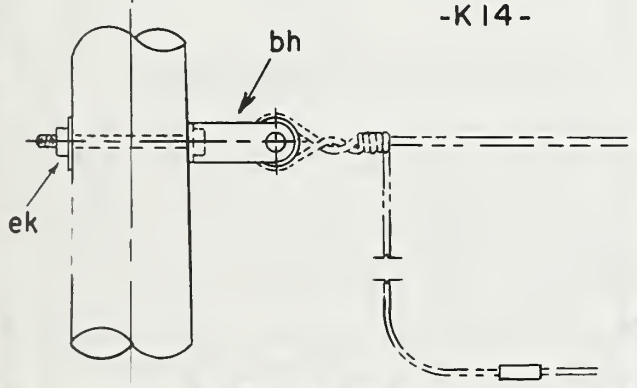


ELEVATION



PLAN

-K14-



ELEVATION

Note:

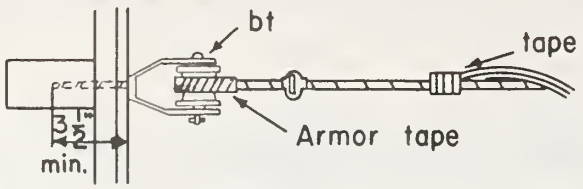
Service connectors to be insulated compression type.

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
c		Bolt, machine, 5/8" x req'd length		as		Clevis, service, swinging, insulated	
d		Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		bh		Clevis, service, deadend, insulated	
o		Bolt, eye, 5/8" x req'd length		ek		Locknuts as required	
ar		Wire holder					

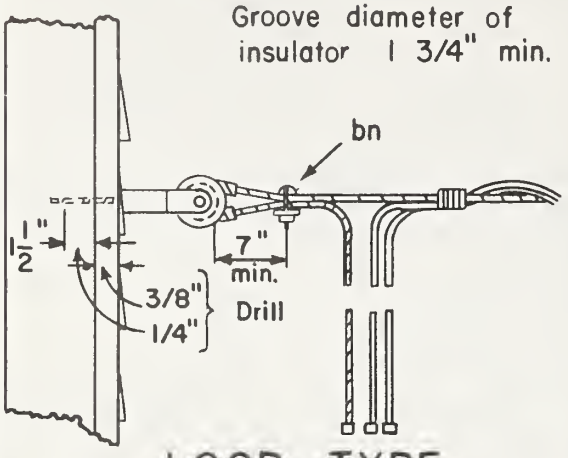
SERVICE ASSEMBLIES

Apr., 1983

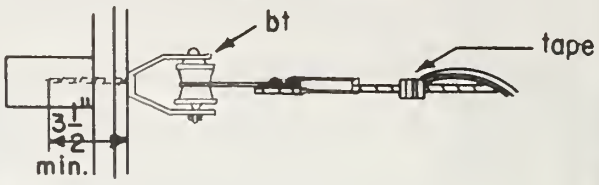
K10, K11, K14

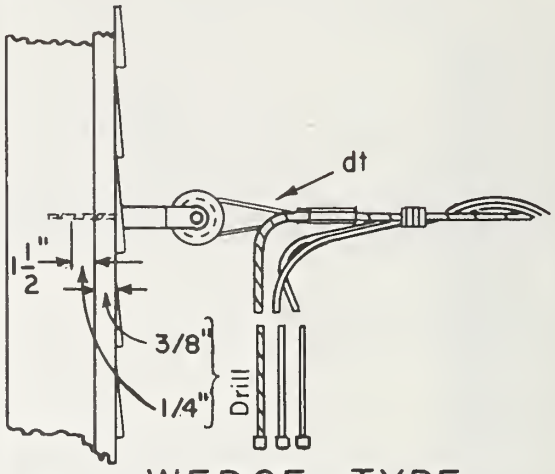


Note:
Groove diameter of insulator 1 3/4" min.

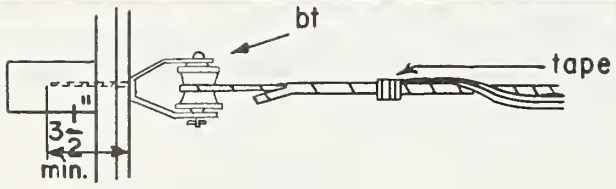


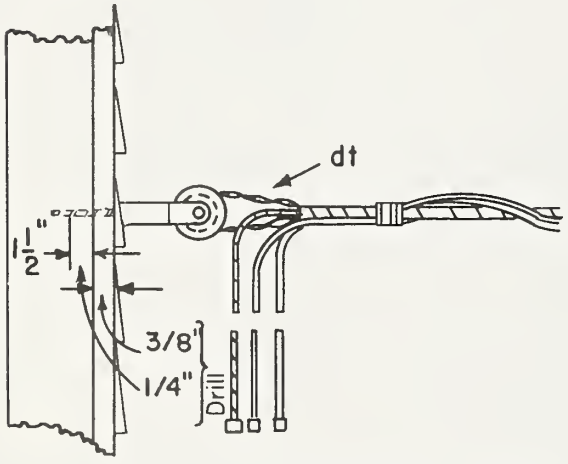
LOOP TYPE



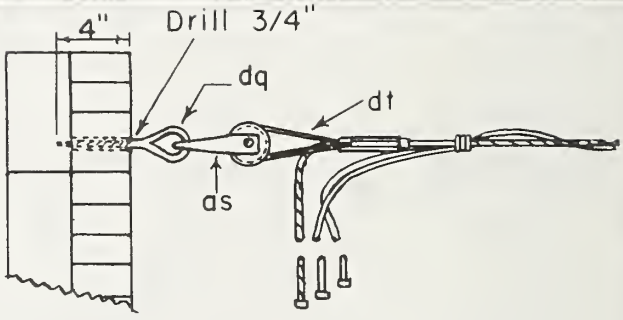


WEDGE TYPE





FORMED TYPE



BRICK OR MASONRY

Notes:

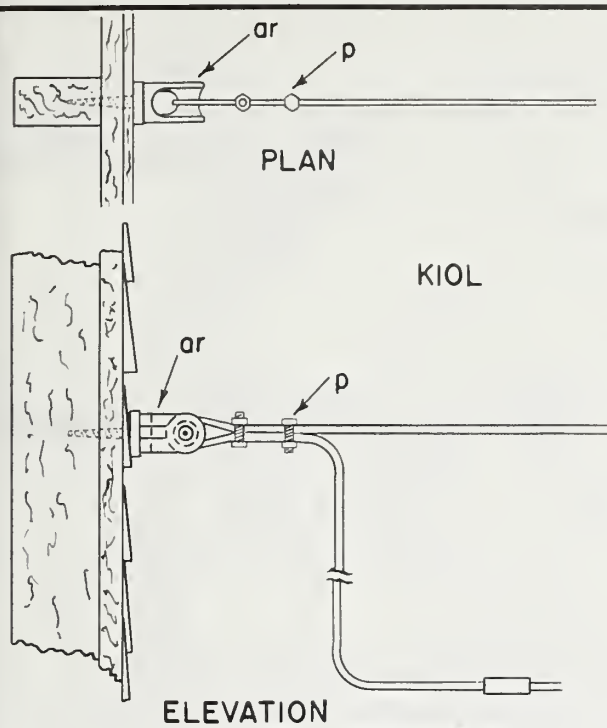
Wedge and formed type service dead-ends in sizes shown on page dt of the List of Materials may be subst. for those shown on K11C, K14C, K15C, and K16C. This type construction should be used for 3 or 4 conductor service cables with bare ACSR neutral. Service connectors to be insulated compression type.

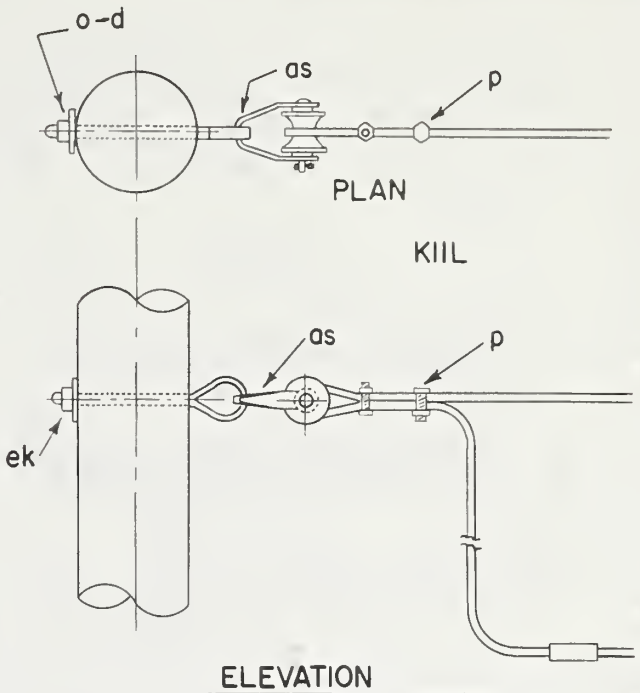
ITEM		MATERIAL		ITEM		MATERIAL	
bt		Wireholder, clevis type, insulated.		dt		Service deadend, wedge type.	
		#24 woodscrew,		dt		Service deadend, preformed type.	
p		Connectors, as required.		dq		Eye screw, elliptical, 1/2" x 6"	
bn		Clamp, loop deadend.				3/4" x 3 1/2" expansion shield	
as		Clevis, service, insulated					

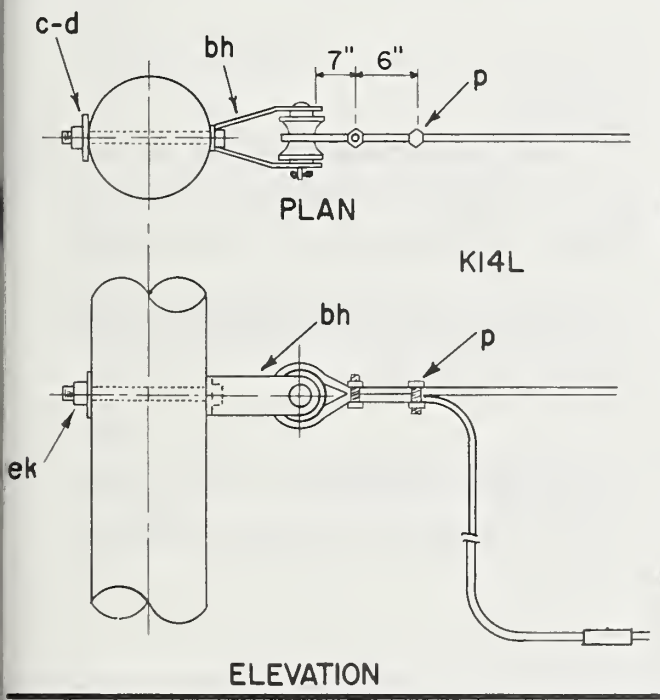
SERVICE ASSEMBLIES, CABLE

Apr., 1983

K10C







NOTE 1:

This type construction should be used for No. 2 covered aluminum conductor and larger.

NOTE 2:

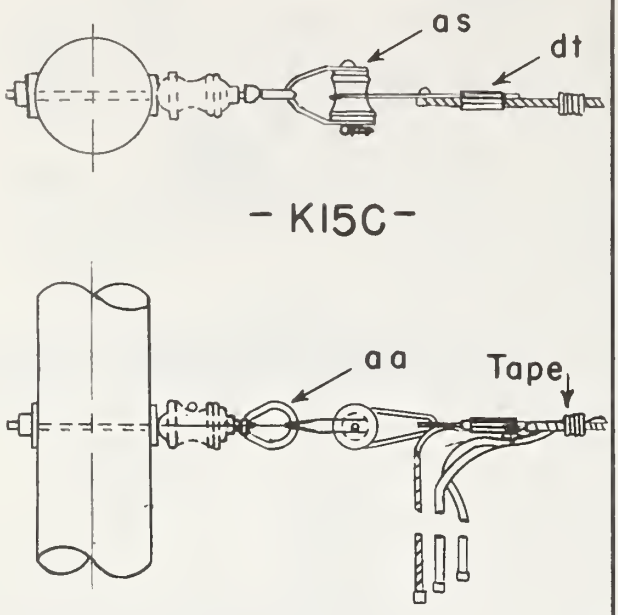
Service connectors to be insulated compression type.

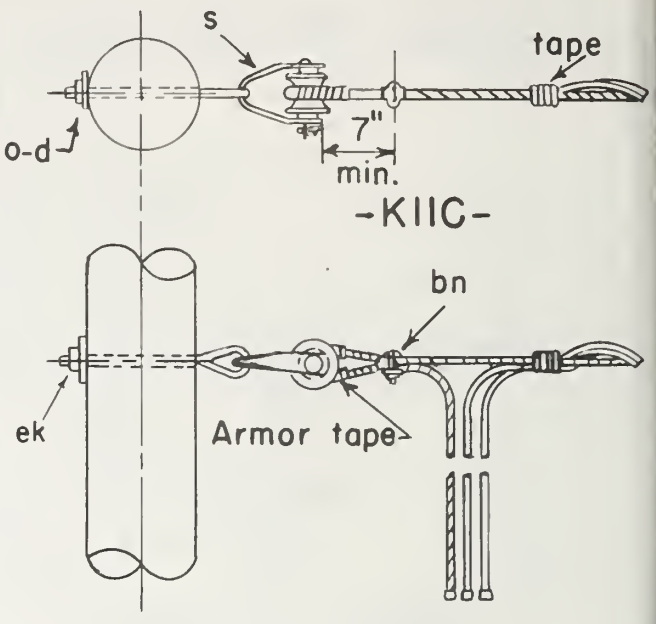
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
c		Bolt, mochine, 5/8"x req'd. length		or		Wireholder	
d		Washer, 2 1/4"x 2 1/4"x 3/16", 13/16" hole		os		Clevis, service, swinging, insuloted	
o		Bolt, eye, 5/8"x req'd. length		bh		Clevis, service, deadend, insulated	
p		Connectors, os req'd.		ek		Locknuts, as required	

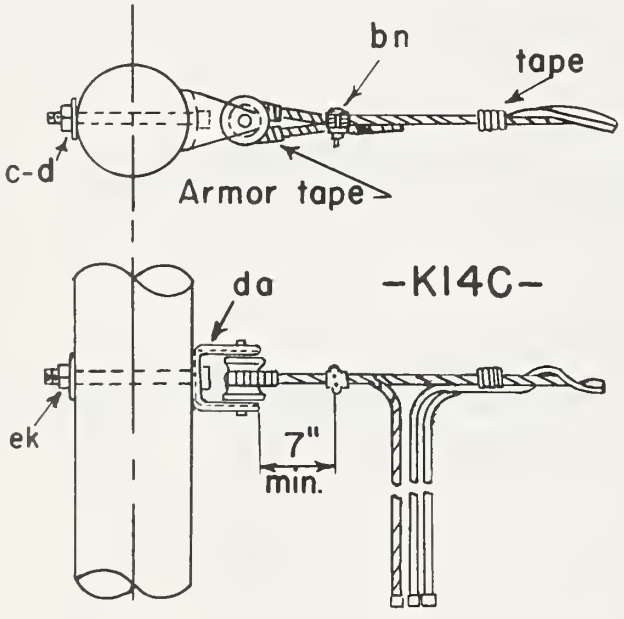
SERVICE ASSEMBLIES
(LARGE CONDUCTORS)

Apr., 1983

K1OL, K11L, K14L







NOTES

This type construction should be used for 3 or 4 conductor service cables with bare A.C.S.R. neutral.

Service connectors to be insulated compression type.

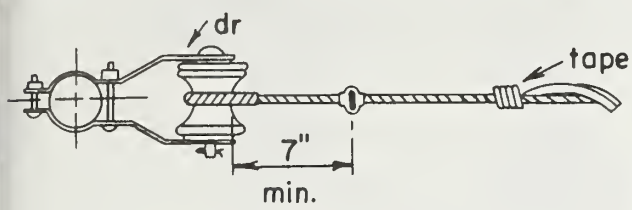
Groove diameter of insulators $1\frac{3}{4}$" minimum for loop deadends.

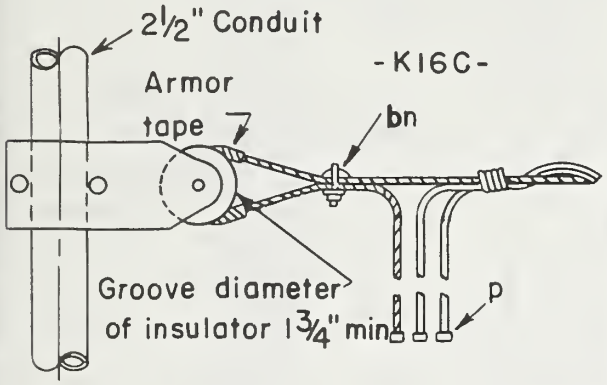
ITEM		MATERIAL		ITEM		MATERIAL	
c		Bolt, machine, $\frac{5}{8}$" x req'd. length		bn		Clamp, loop deadend	
d		Washer, $2\frac{1}{4}$" x $2\frac{1}{4}$" x $\frac{3}{16}$", $\frac{13}{16}$" hole		da		Bracket, insulated	
o		Bolt, eye, $\frac{5}{8}$" x req'd. length		as		Clevis, service swinging	
s		Clevis, secondary, swinging, insul.		p		Connectors, as required	
aa		Nut, eye		dt		Service deadend	
ek		Locknuts, as required					

SERVICE ASSEMBLIES, CABLE

Apr., 1983

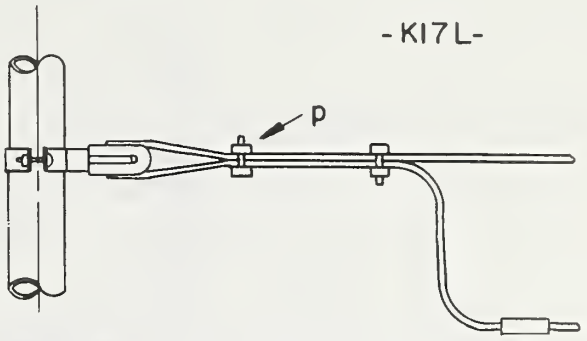
K11C, K14C, K15C





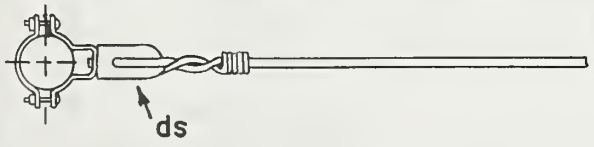
-K16C-

NOTE: This type constr. should be used for three conductor service cables with bare ACSR neutral.

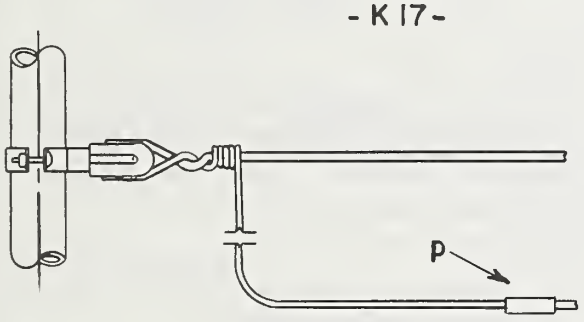


-K17L-

NOTE: This type constr. should be used for No. 2 covered aluminum conductor.



-K17-



NOTES:

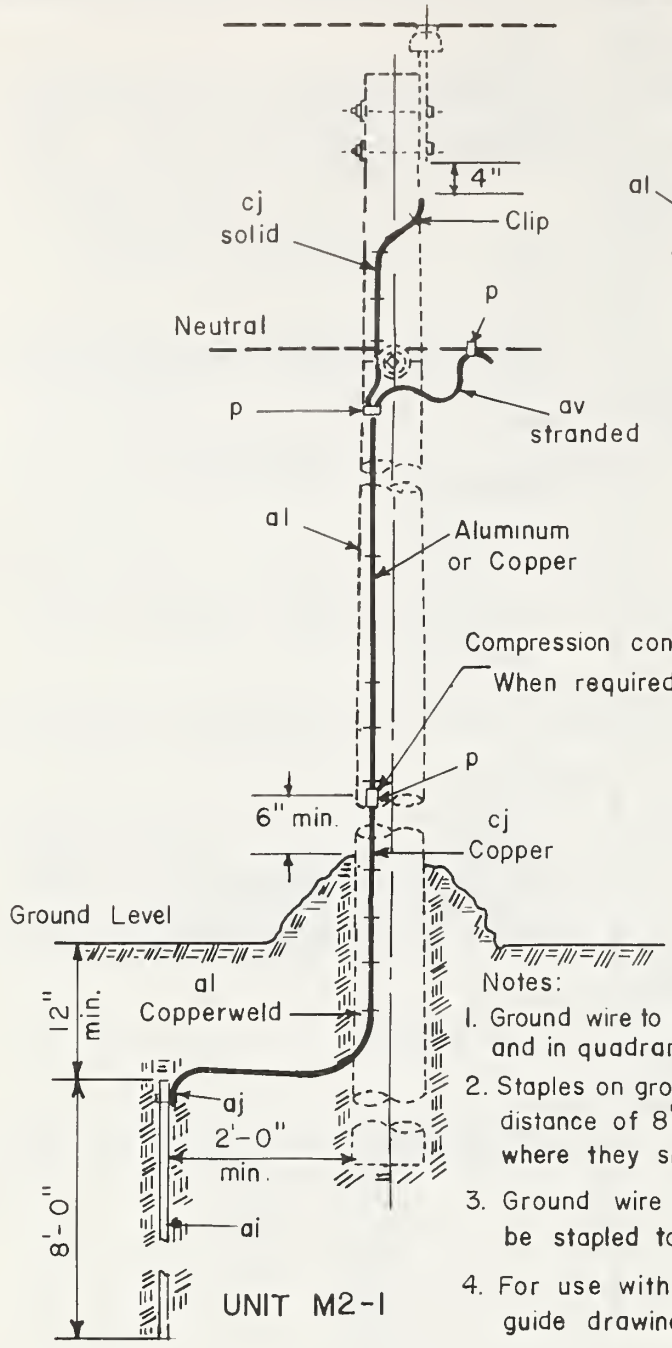
1. Service connectors to be insulated compression type.
2. For arrangement of service assembly units see drawing M24-10.

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
p		Connectors, as req'd		dr		Clevis, conduit insulated	
bn		Clamp, loop deadend		ds		Wireholder, conduit	

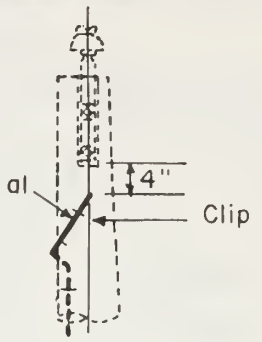
SERVICE ASSEMBLIES
(FOR RANCH TYPE HOUSES)

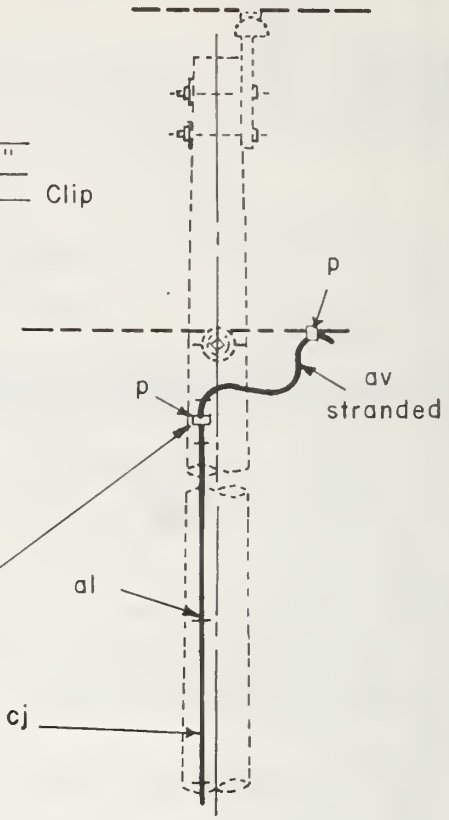
Apr., 1983

K16C, K17L, K17



UNIT M2-I





UNIT M2-II
similar to Unit M2-I
except as shown.

Notes:

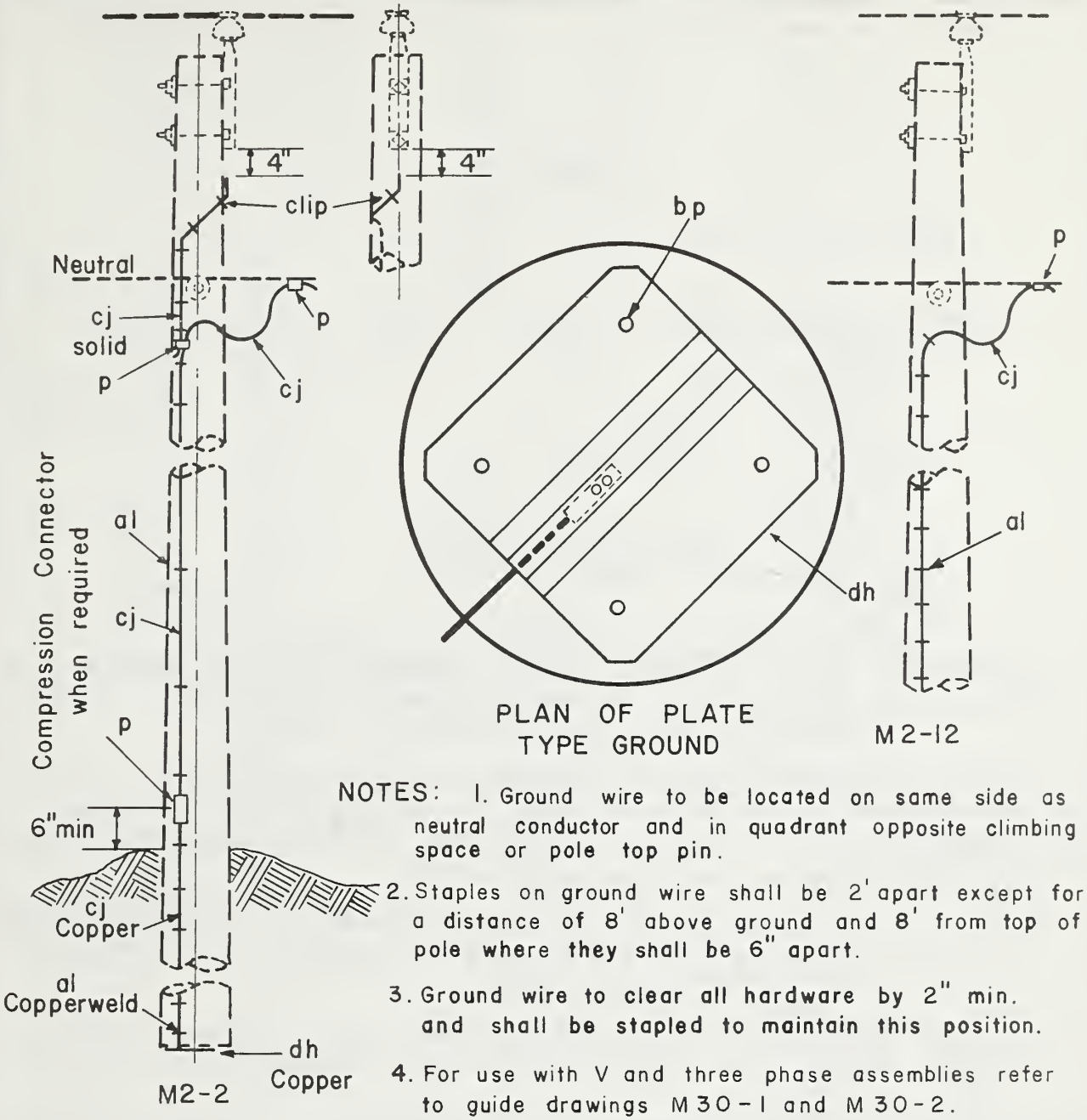
1. Ground wire to be located on same side as Neutral Conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2' apart, except for a distance of 8' above ground and 8' from top of pole where they shall be 6" apart.
3. Ground wire to clear all hardware by 2" min. and shall be stapled to maintain this position.
4. For use with V and 3-phase assemblies refer to guide drawings M30-1 and M30-2.

		ASSEMBLY UNIT	
ITEM	MATERIAL	M2-I	M2-II
p	Connector, compression	as req'd.	as req'd.
ai	Rod, ground, 5/8" minimum diameter	1	1
aj	Clamp, ground rod wire	1	1
al	Staples, ground wire (copper or steel to match ground wire)	as req'd.	as req'd.
al	Ground wire clip	1	
cj	Ground wire, minimum No. 6 copper or equiv. conductivity	as req'd	as req'd
av	Jumper, stranded, min. No 6 copper or equiv. conductivity	as req'd	as req'd

12.5/7.2 kV
GROUNDING ASSEMBLY - GROUND ROD TYPE

Apr., 1983

M2-1, M2-11



NOTES:

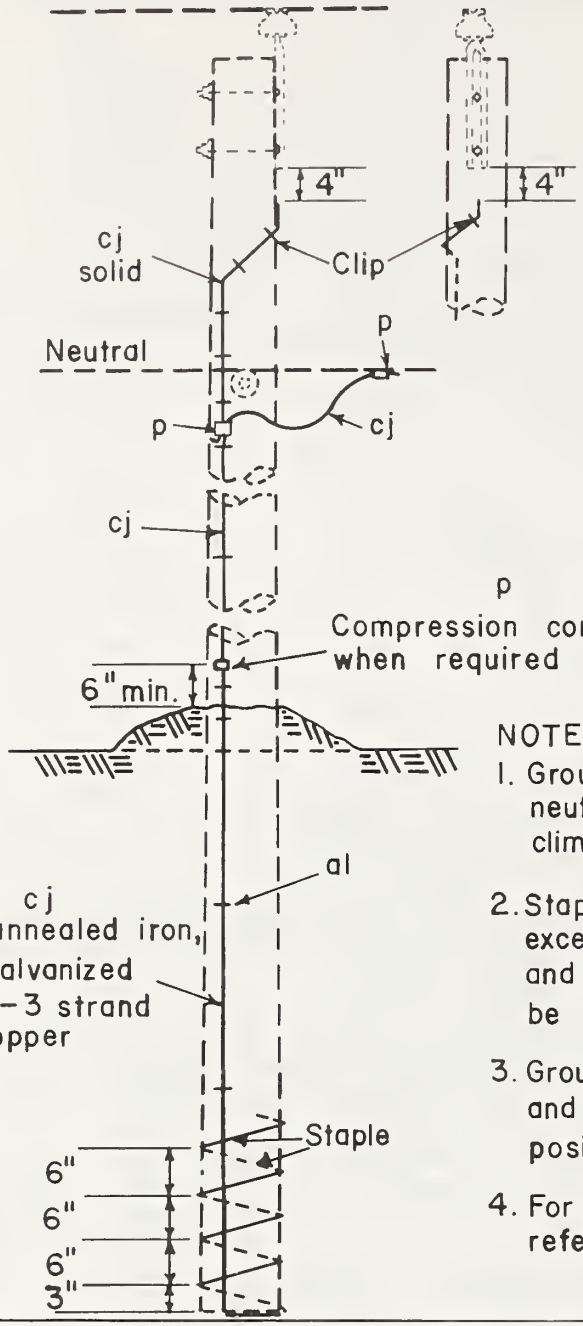
1. Ground wire to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2' apart except for a distance of 8' above ground and 8' from top of pole where they shall be 6" apart.
3. Ground wire to clear all hardware by 2" min. and shall be stapled to maintain this position.
4. For use with V and three phase assemblies refer to guide drawings M30-1 and M30-2.

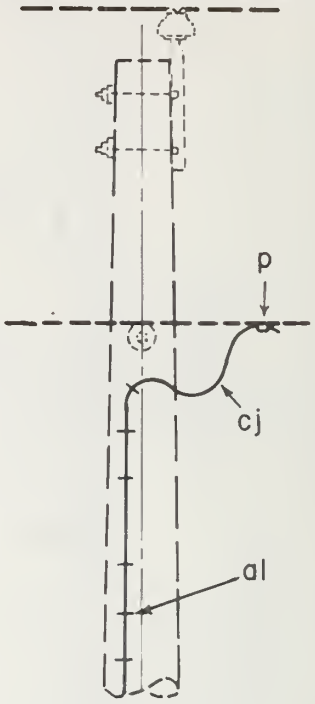
ITEM	MATERIAL	M2-2	M2-12
cj	Ground wire, min. No. 6 Copper or equiv. conductivity	as req'd.	as req'd.
dh	Grounding plate, butt type, copper	1	1
al	Staples, ground wire (copper or steel to match ground wire)	as req'd.	as req'd.
p	Connector, compression	as req'd.	
al	Ground wire clip	1	
bp	Nails, galvanized, 1"	4	4

12.5 / 7.2 kV
POLE PROTECTION ASSEMBLY - PLATE TYPE

Apr., 1983

M2-2, M2-12





M2-12A

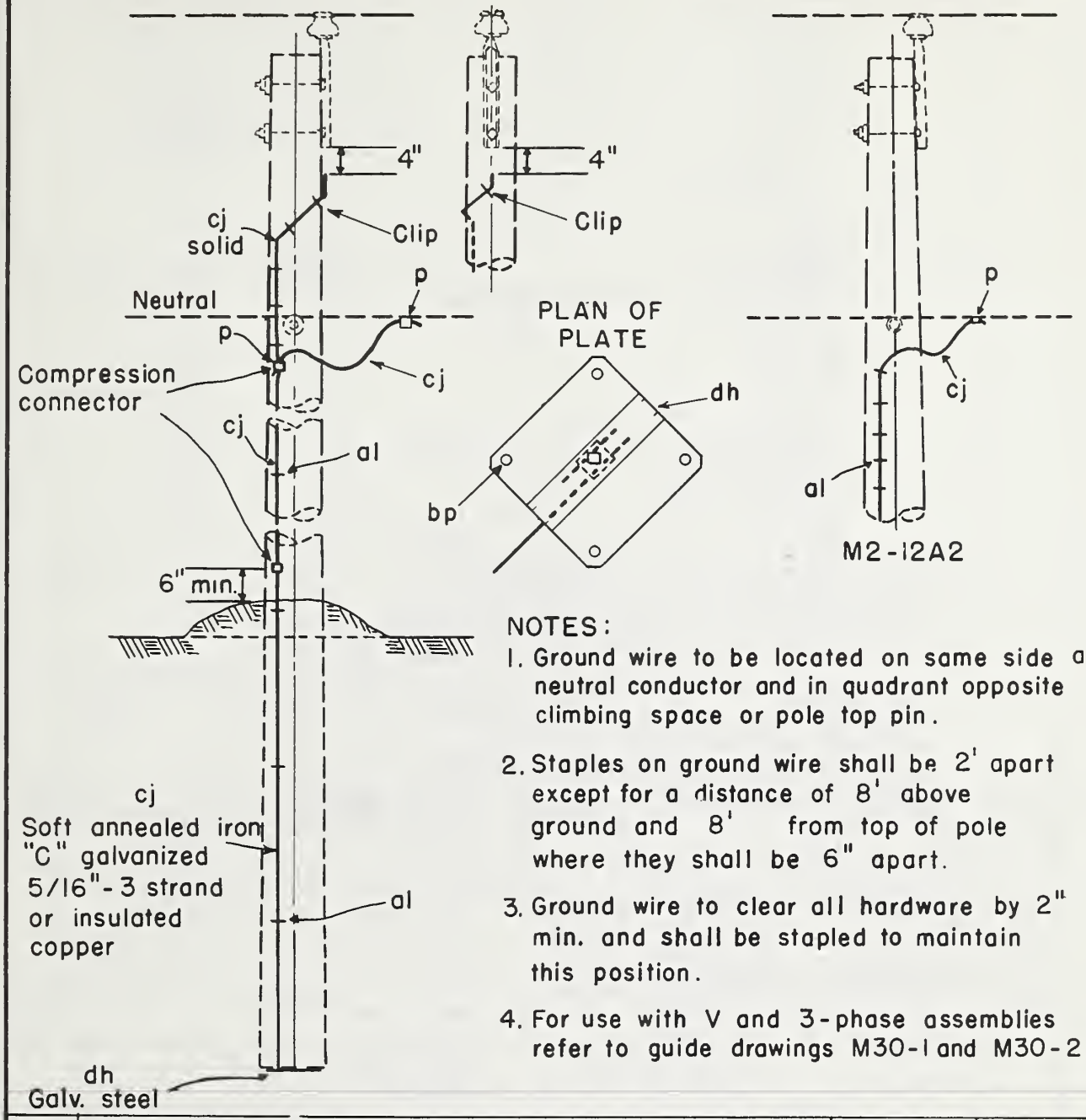
NOTES:

1. Ground wire to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2' apart except for a distance of 8' above ground and 8' from top of pole where they shall be 6" apart.
3. Ground wire to clear all hardware by 2" min. and shall be stapled to maintain this position
4. For use with V and 3-phase assemblies refer to guide drawings M30-1 and M30-2.

ITEM	MATERIAL	M2-2A	M2-12A
p	Connector, compression	as req'd.	
al	Clip, ground wire	1	
al	Staples, ground wire(copper or steel to match ground wire)	as req'd.	as req'd.
cj	Ground wire, min. No. 6 Copper or equivalent conductivity	as req'd.	as req'd.
cj	Ground wire, soft annealed iron, "C" galvanized 5/16"-3 strand	as req'd.	as req'd.

12.5/7.2 kV
POLE PROTECTION ASSEMBLY
WRAP-AROUND TYPE

Apr., 1983		M2-2A, M2-12A



NOTES:

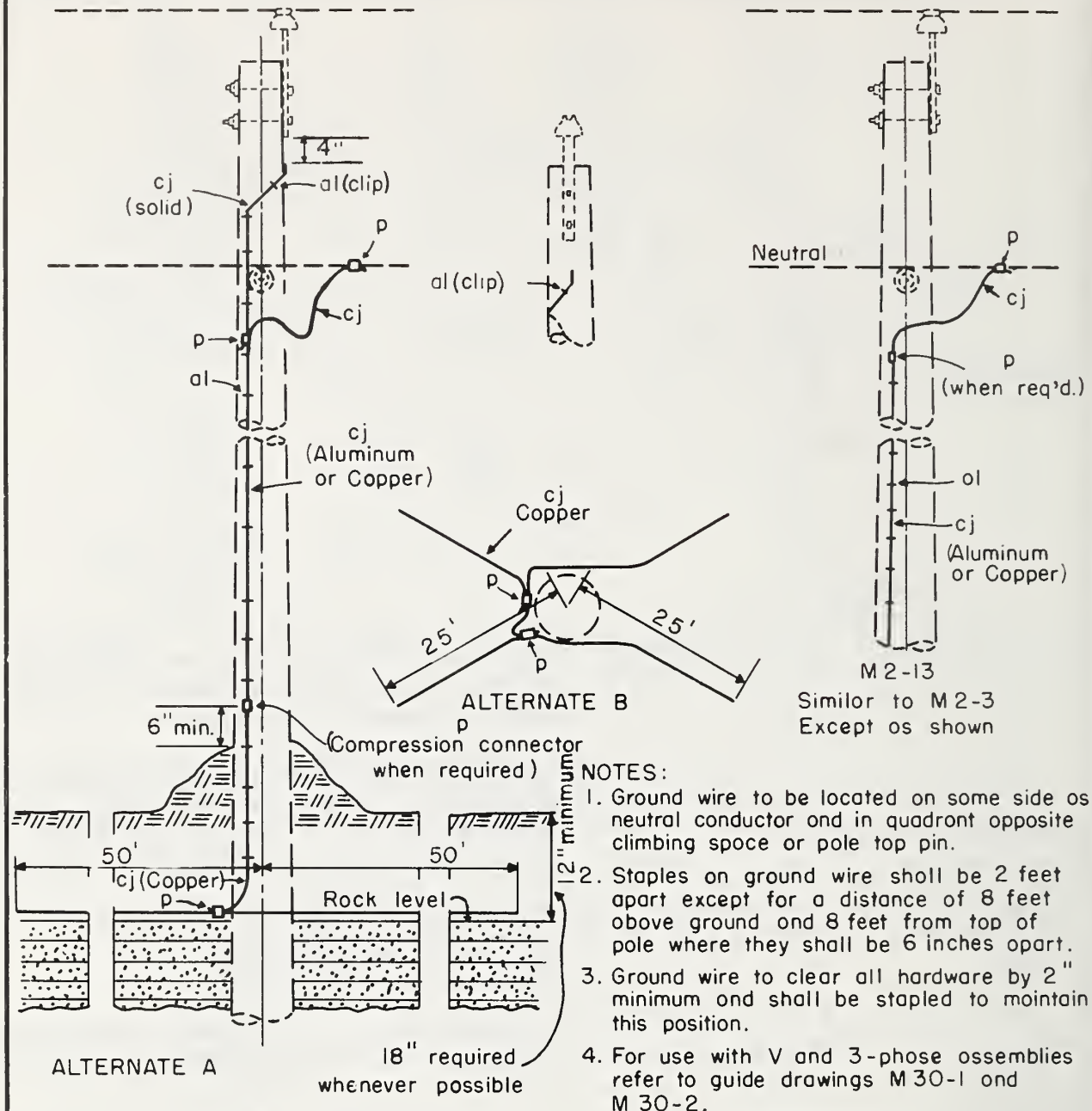
1. Ground wire to be located on same side as neutral conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2' apart except for a distance of 8' above ground and 8' from top of pole where they shall be 6" apart.
3. Ground wire to clear all hardware by 2" min. and shall be stapled to maintain this position.
4. For use with V and 3-phase assemblies refer to guide drawings M30-1 and M30-2.

ITEM	MATERIAL	M2-2A2	M2-12A2
dh	Grounding plate, butt type, galv. steel	1	1
bp	Nails, galvanized, 1"	4	4
p	Connectors, compression	as req'd.	
cj	Ground wire, min. No.6 Copper or equivalent conductivity	as req'd.	as req'd.
al	Clip, ground wire	1	
al	Staples, ground wire(copper or steel to match ground wire)	as req'd.	as req'd.
cj	Ground wire, soft annealed iron, "C" galvanized 5/16"-3 strand	as req'd.	as req'd.

12.5/7.2 kV
POLE PROTECTION ASSEMBLY
PLATE TYPE

Apr., 1983

M2-2A2, M2-12A2



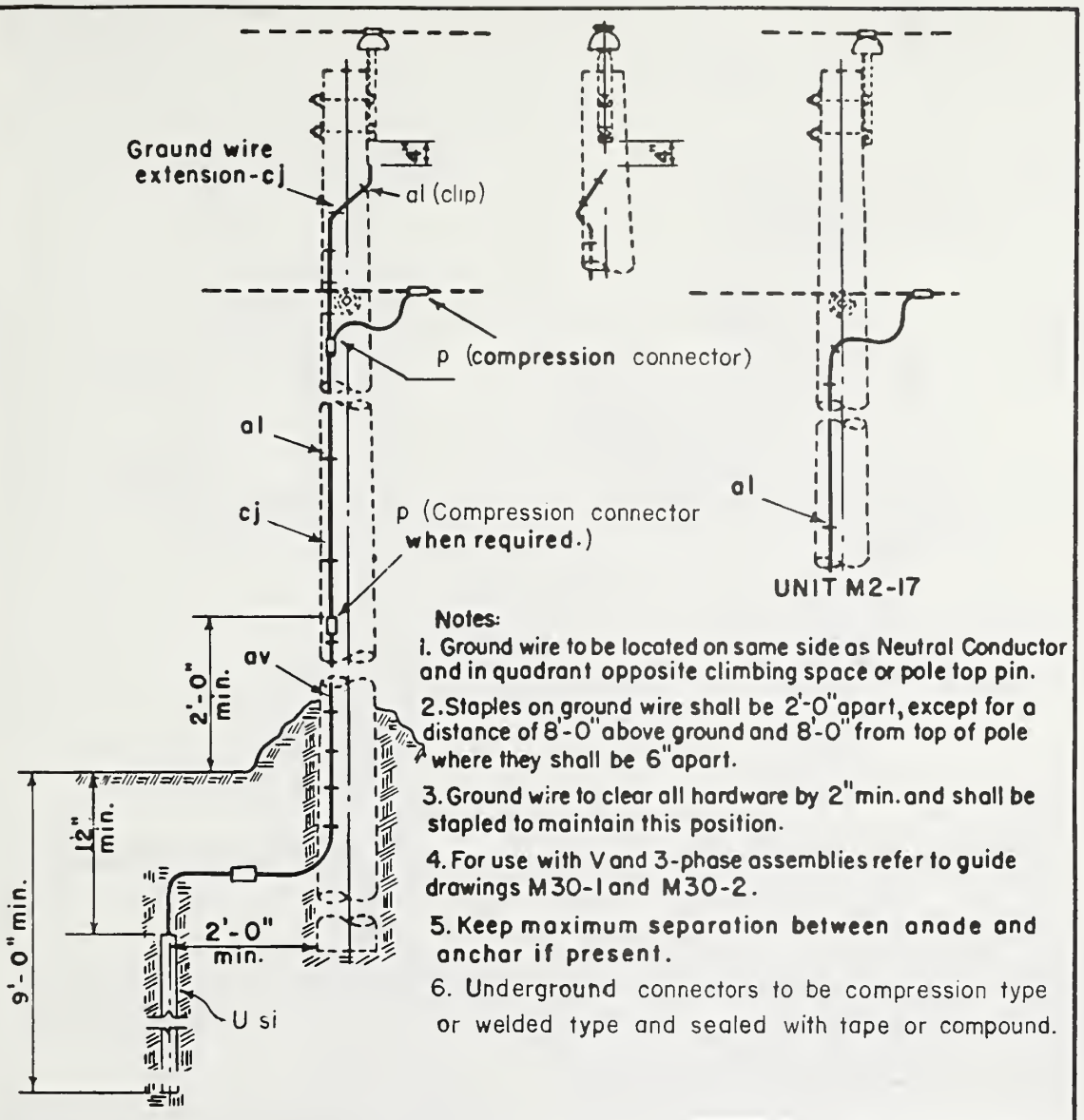
NOTES:

1. Ground wire to be located on some side os neutral conductor ond in quadront opposite climbing spoce or pole top pin.
2. Staples on ground wire sholl be 2 feet apart except for a distance of 8 feet obove ground ond 8 feet from top of pole where they shall be 6 inches opart.
3. Ground wire to clear all hardware by 2" minimum ond shall be stapled to maintain this position.
4. For use with V and 3-phose ossemblies refer to guide drawings M 30-1 ond M 30-2.

		ASSEMBLY UNIT	
ITEM	MATERIAL	M2-3	M2-13
p	Connector, compression	os req'd.	os req'd.
al	Staples, ground wire (copper or steel to motch ground wire)	as req'd	os req'd.
ol	Ground wire clip	1	
cj	Ground wire, min. No. 6 Copper or equivalent conductivity	as req'd.	as req'd.

12.5/7.2 kV GROUNDING ASSEMBLY TRENCH TYPE

Apr., 1983		M2-3, M2-13



Notes:

1. Ground wire to be located on same side as Neutral Conductor and in quadrant opposite climbing space or pole top pin.
2. Staples on ground wire shall be 2'-0" apart, except for a distance of 8'-0" above ground and 8'-0" from top of pole where they shall be 6" apart.
3. Ground wire to clear all hardware by 2" min. and shall be stapled to maintain this position.
4. For use with V and 3-phase assemblies refer to guide drawings M30-1 and M30-2.
5. Keep maximum separation between anode and anchar if present.
6. Underground connectors to be compression type or welded type and sealed with tape or compound.

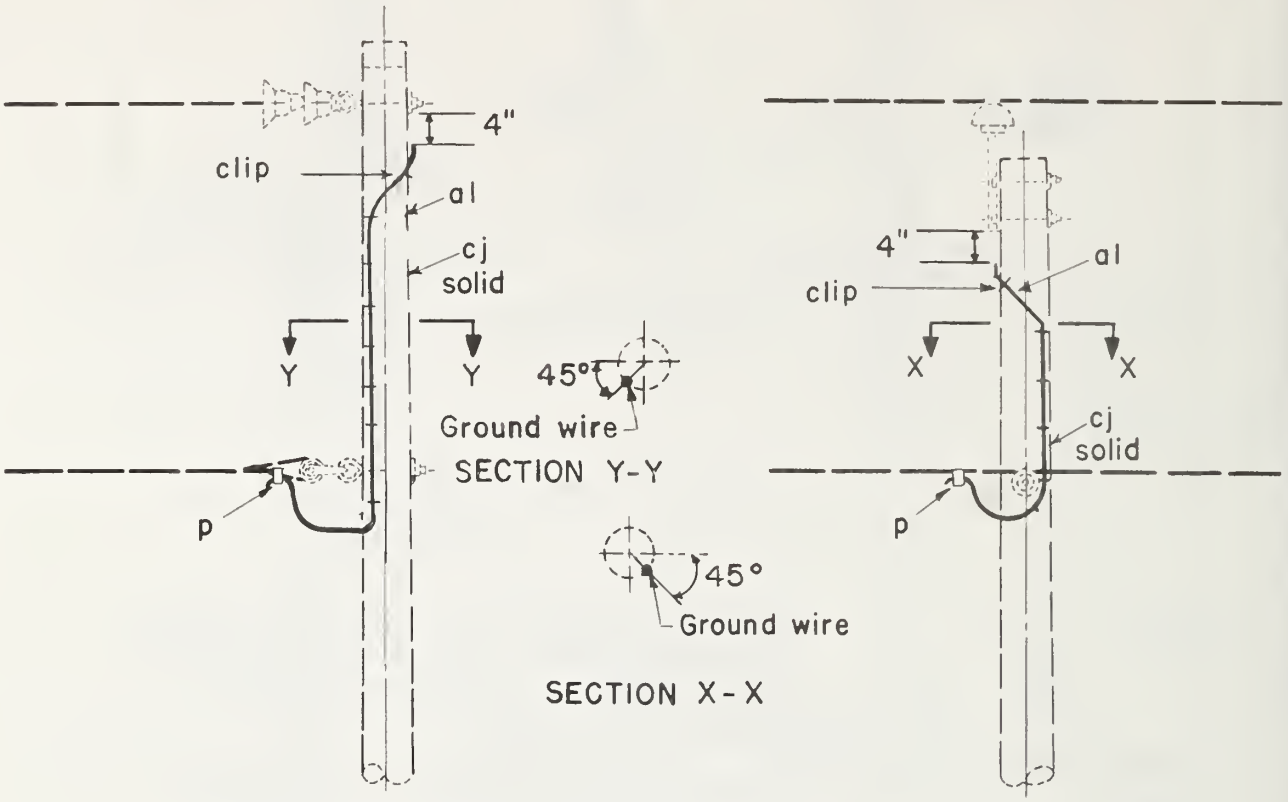
See REA Bull. 161-23, part IV

ITEM	MATERIAL	Assembly M2-7	Unit M2-17
p	Connector, compression as req'd.		
ol	Staples, ground wire, (copper or steel to match gnd wire)	as req'd	as req'd
ol	Ground wire clip	1	
av	Conductor, M.H.D. or S.D. copper, TW insulated #12 AWG min.	as req'd	as req'd
cj	Ground wire, #6 S.D. copper or equivolent	as req'd	as req'd
cj	Ground wire, extension, #6 S.D. copper or equiv.	1	
U si	Anode, as specified, (See REA Bulletin 161-23 part IV page 7)		

GALVANIC ANODE ASSEMBLY

Apr., 1983

M2-7, M2-17



DEADEND ARRANGEMENT

TANGENT ARRANGEMENT

NOTES:

1. Ground wire to be located on same side as Neutral Conductor and in quadrant opposite climbing space.
2. Staples on ground wire to be 6" apart.
3. Ground wire to clear all hardware by 2" minimum and shall be stapled to maintain this position.
4. For use with V and 3-phase assemblies refer to guide drawings M30-1 and M30-2.

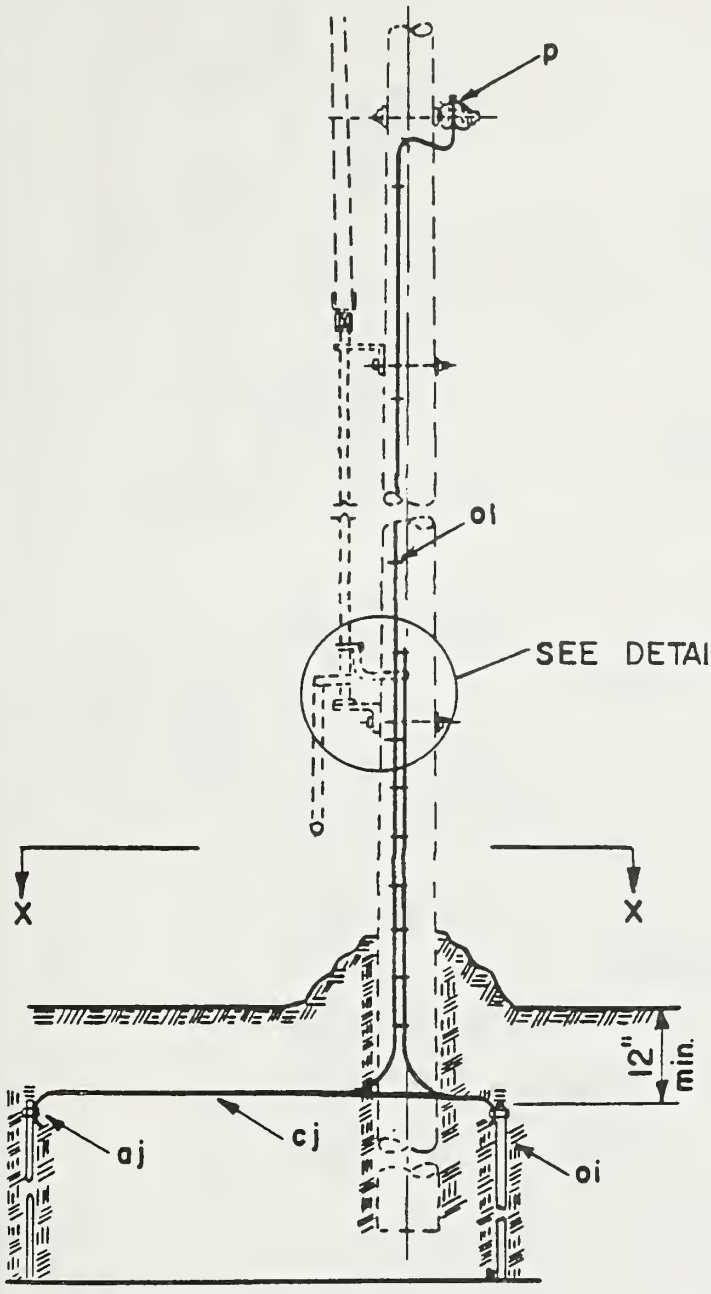
ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
p	1	Connector		a l	1	Ground wire clip	
a l		Staples ground wire, as required		c j		Ground wire, minimum No.6 copper	
						or equivalent conductivity, as req'd.	

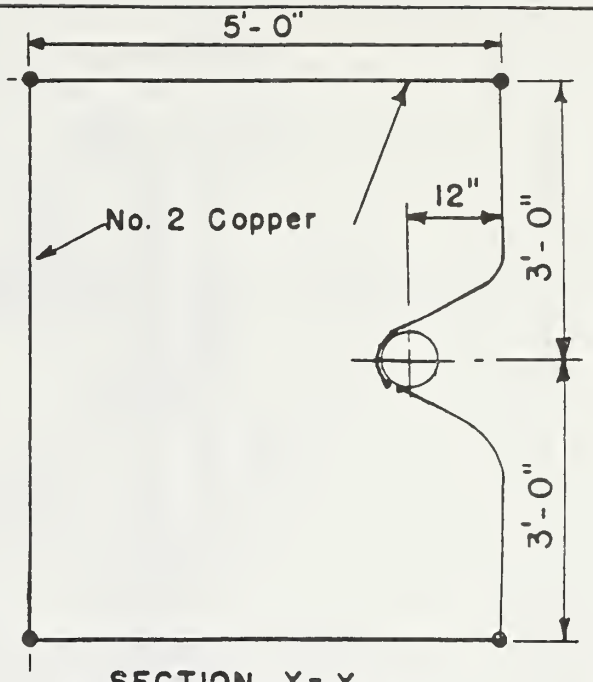
12.5/7.2 kV

POLE TOP PROTECTION ASSEMBLY

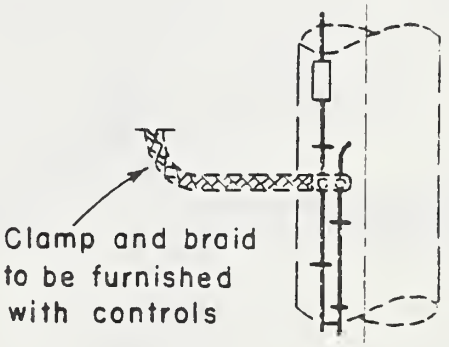
Apr., 1983

M2-9





SECTION X-X
(Detail of Ground Grid)



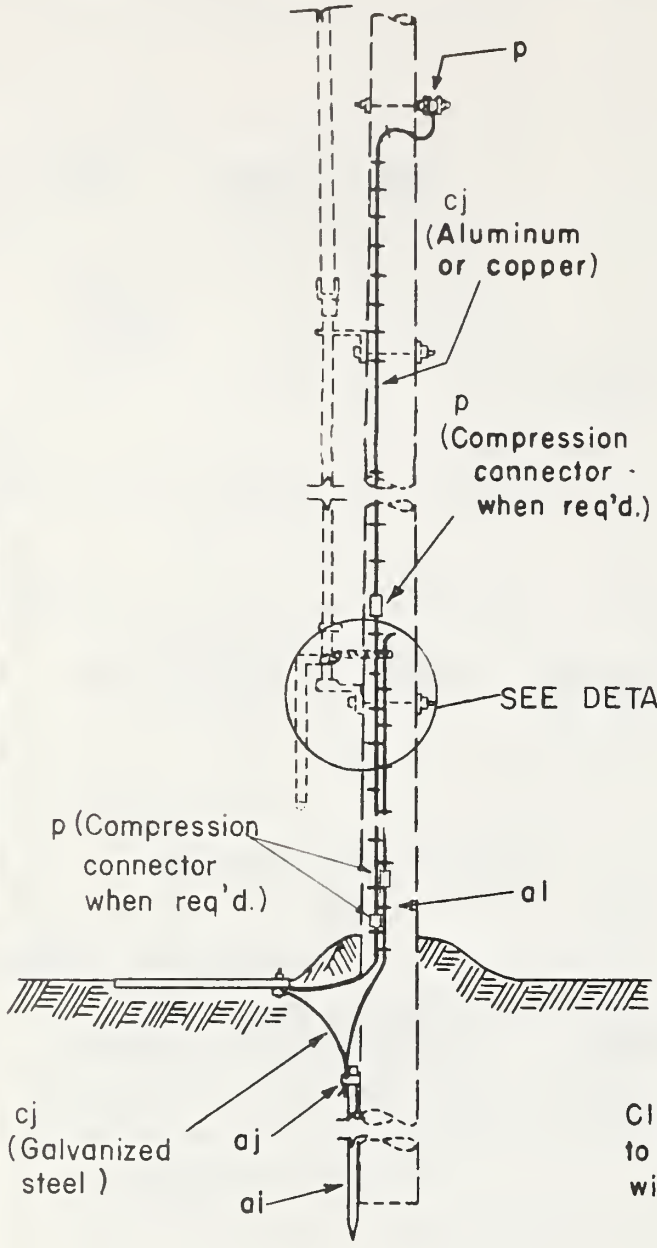
DETAIL

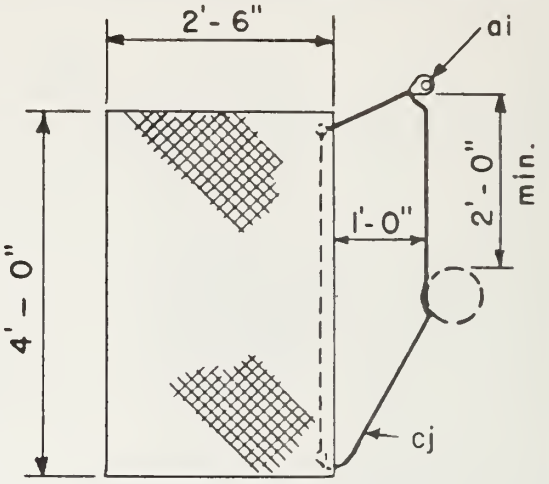
ITEM	NO. REQD.	MATERIAL	ITEM	NO. REQD.	MATERIAL
ai	4	Rod, ground 5/8" dia. min. x 8'-0"			
aj	4	Clamp, ground rod			
al		Staples, ground wire, (copper)			
cj		Ground wire, #2 S.D. Copper			
p		Connector			

GROUNDING ASSEMBLY-GROUND ROD
TYPE FOR SECTIONALIZING
AIR BREAK SWITCH

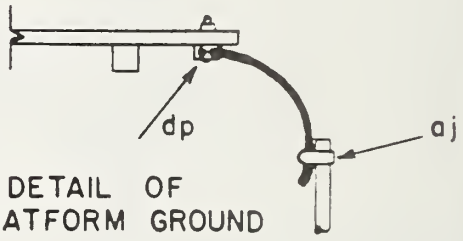
Apr., 1983

M2-15

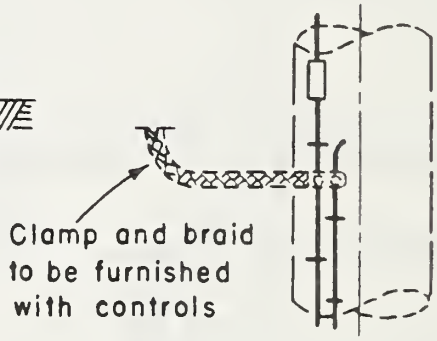




DETAIL OF PLATFORM



DETAIL OF
PLATFORM GROUND



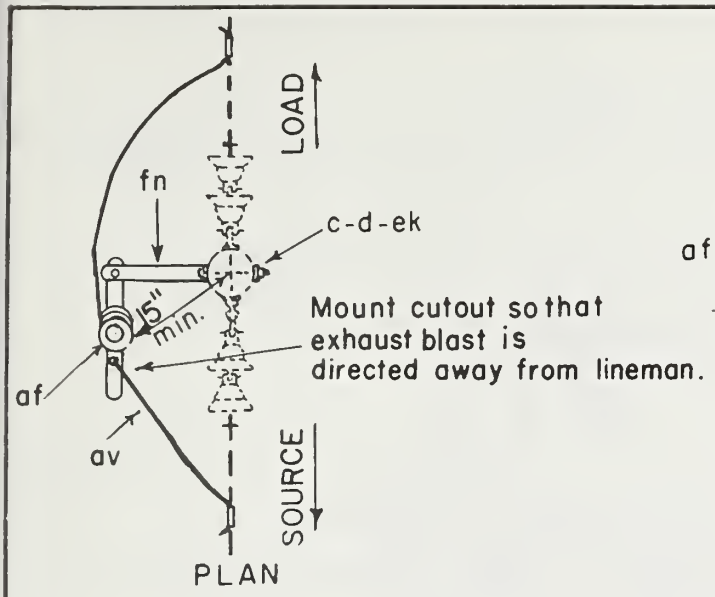
DETAIL

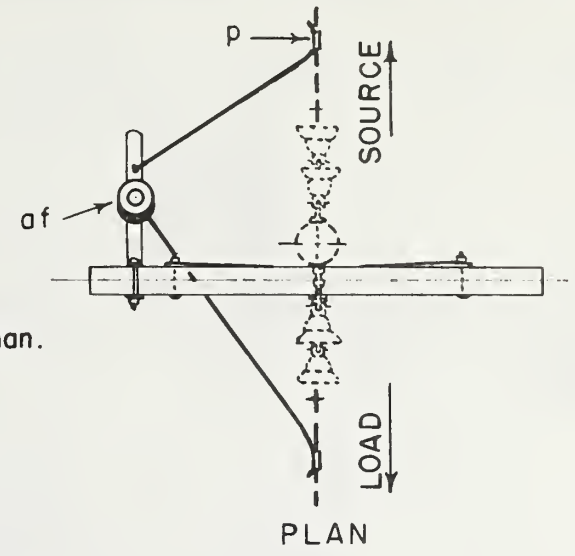
ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
p		Connectors, as required	cj		Ground wire, No. 2 copper or equiv.
ai	1	Rod, ground, 5/8" dia. x 8'-0"(galv.)			conductivity, as required
aj	1	Clamp, ground rod (galvanized steel)	dp	2	Grounding connector and lockwasher
al		Staples, ground wire, as required (galv)		1	Iron grounding platform plate (galv)

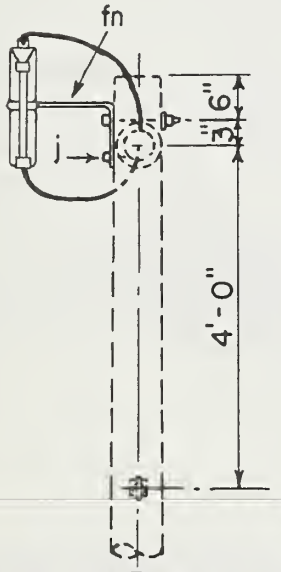
GROUNDING ASSEMBLY – PLATFORM TYPE FOR SECTIONALIZING AIR BREAK SWITCH

Apr., 1983

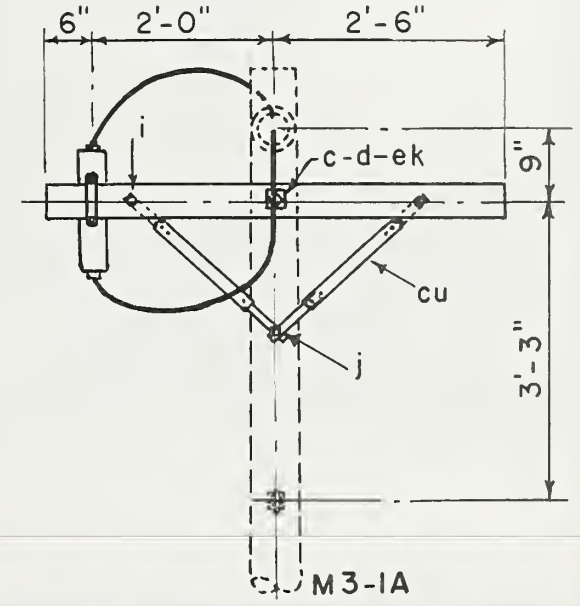
M2-15A







M3-4



M3-1A

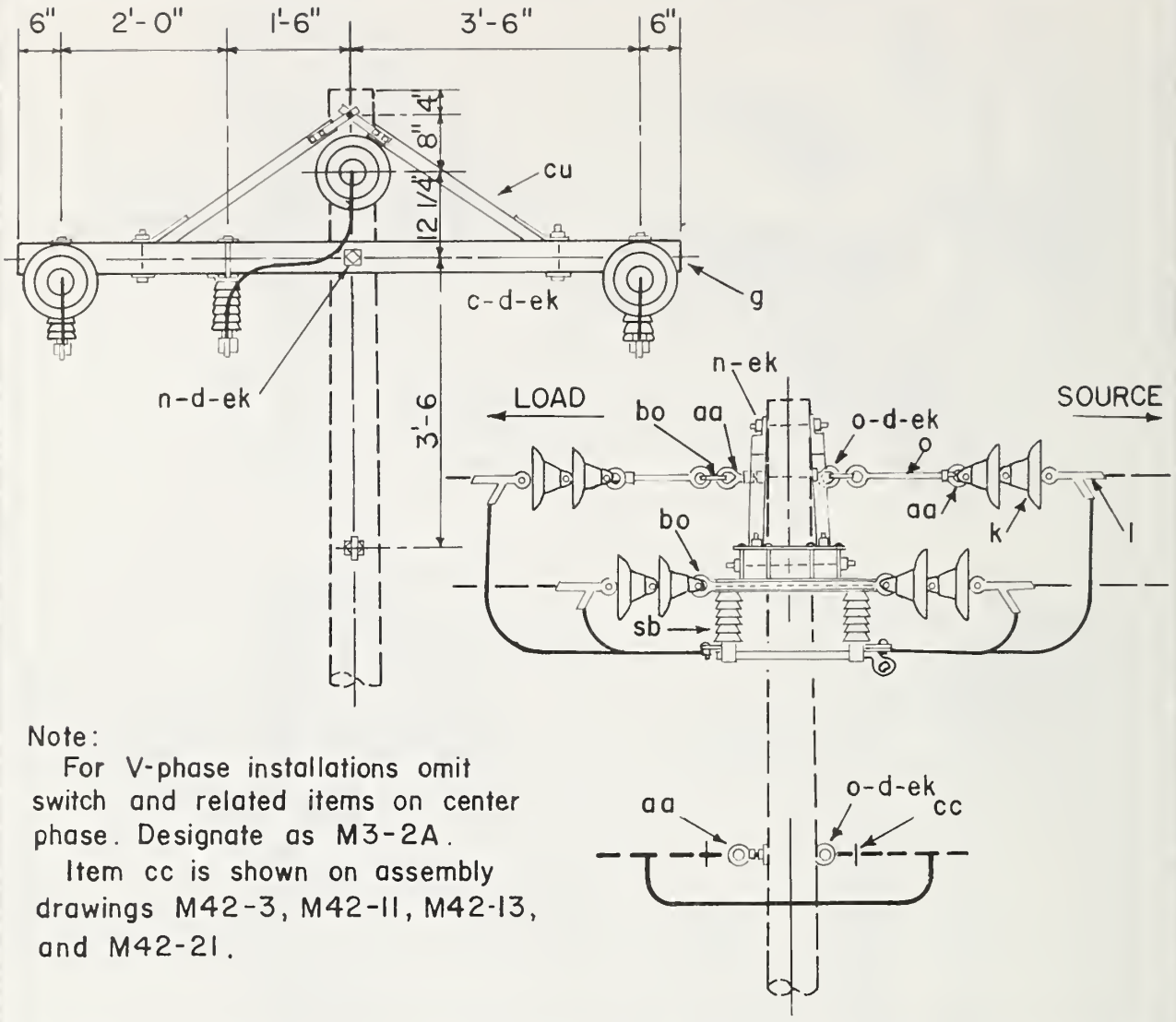
ITEM	MATERIAL	M3-4 NO. REQUIRED	M3-1A NO. REQUIRED
c	Bolt, machine, 5/8" x required length	1	1
d	Washer, 2 1/4" sq. x 3/16", 13/16" hole	1	2
g	Crossarm, 3 5/8" x 4 5/8" x 5'-0"		1
i	Bolt, carriage, 3/8" x 4 1/2"		2
j	Screw, lag, 1/2" x 4"	1	1
p	Connector, compression type	2	2
af	Cutout, fuse, single shot	1	1
av	Leads or jumpers as required		
cu	Brace, wood, 28"		2
fn	Bracket, extension, L type	1	
ek	Locknuts, as required		

12.5/7.2 kV, 1-PHASE

ONE SECTIONALIZING FUSE CUTOUT

Apr., 1983

M3-1A, M3-4



Note:

For V-phase installations omit switch and related items on center phase. Designate as M3-2A.

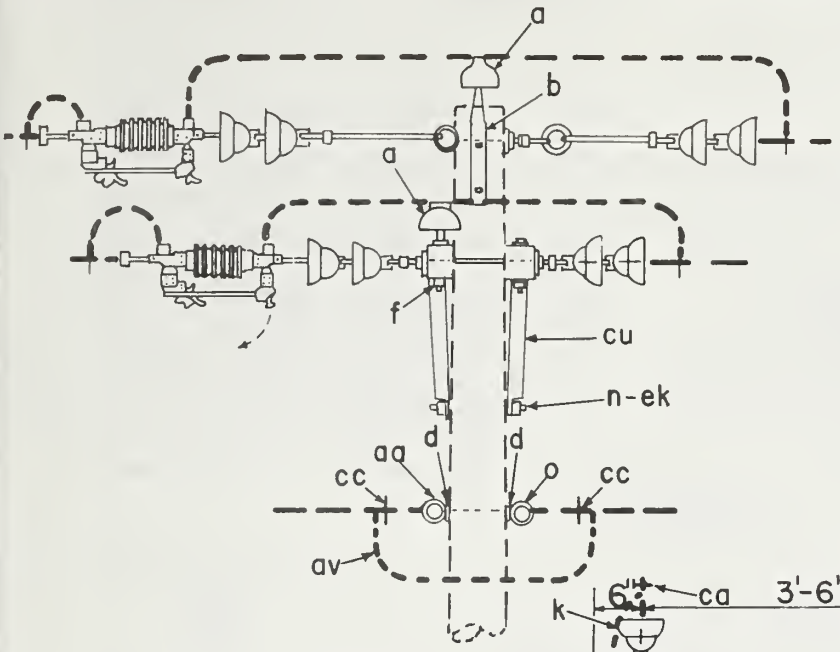
Item cc is shown on assembly drawings M42-3, M42-11, M42-13, and M42-21.

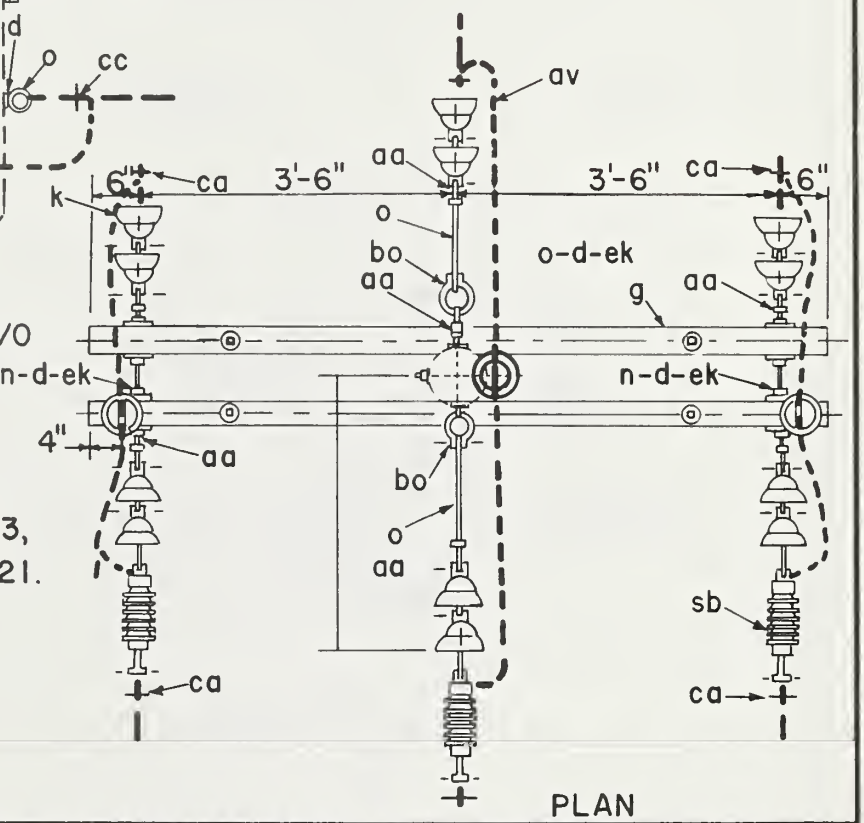
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
c	4	Bolt, machine, 1/2"x reqd. length		aq		Jumpers, as required	
d	4	Washer, round, 1 3/8" dia.		bo	6	Shackle, anchor	
d	3	Washer, square, 2 1/4"		cc	2	Deadend assembly, neutral	
g	2	Crossarm, 3 5/8"x 4 5/8"x 8'-0"		cu	2	Brace, crossarm, wood, 60" span	
l	6	Clamp, deadend		ek		Locknuts, as required	
n	2	Bolt, double arming, 5/8"x req'd lgth.		sb	3	Switch, disconnect, 15 kV, with	
o	4	Bolt, eye, 5/8"x required length				mounting hardware	
p		Connectors, as required		k	12	Insulator, suspension	
aa	4	Nut, eye, 5/8"					

12.5/7.2 kV
TWO OR THREE SECTIONALIZING
DISCONNECT SWITCHES

Apr., 1983

M3-2A, M3-3A





PLAN

NOTES:

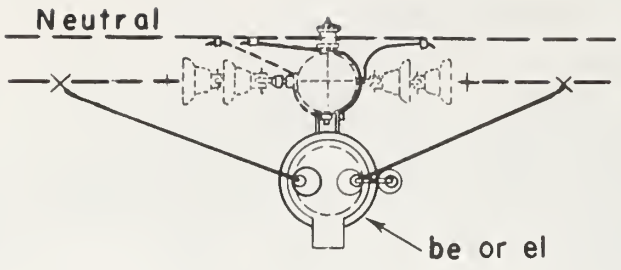
1. Mimimum conductor size is 4/0
2. Specify that extension links are to be supplied with switches
3. Items ca and cc are shown on assembly drawing M42-3, M42-11, M42-13 and M42-21.

ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
a	3	Insulator, pin type			
b	1	Pin, pole top, 20"	o	4	Bolt, eye, 5/8" x req'd. length
c	4	Bolt, machine, 1/2" x req'd length	p		Connectors as required
c	2	Bolt, machine, 5/8" x req'd length	aa	8	Nut, eye, 5/8"
d	14	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	av		Jumpers and leads as req'd.
d	4	Washer, round, 1 3/8" diam., 9/16" hole	bo	2	Shackle, anchor
f	2	Pin, crossarm, steel, 5/8" x 10 3/4"	ca	6	Deadend assembly, primary
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	cc	2	Deadend assembly, neutral
k	12	Insulators, suspension	cu	2	Brace, wood, 60" span
n	4	Bolt, double arming, 5/8" x req'd. length	du	3	Extension Links
ek		Locknuts as required			
sb	3	Switch, line tension			

12.5/7.2 kV
LINE TENSION SWITCHES

Apr., 1983

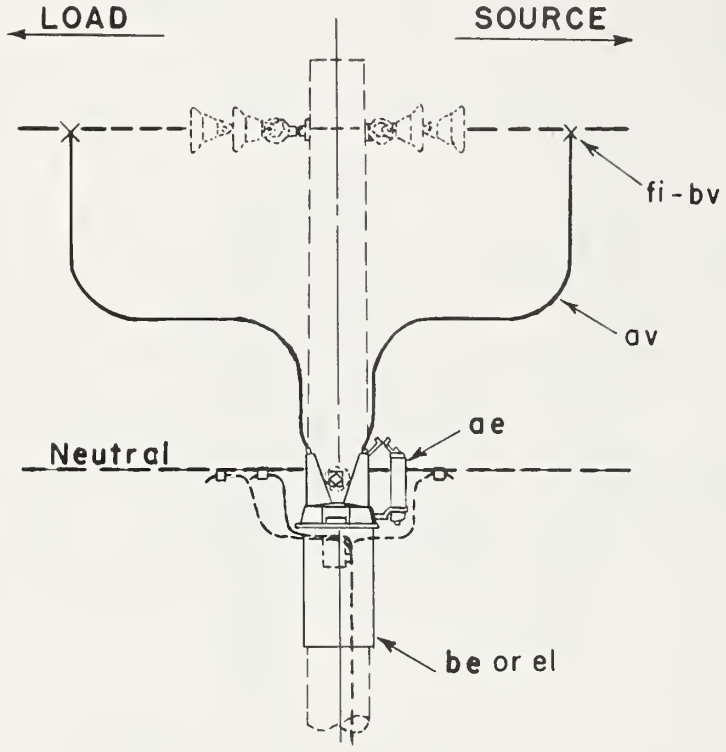
M3-3B



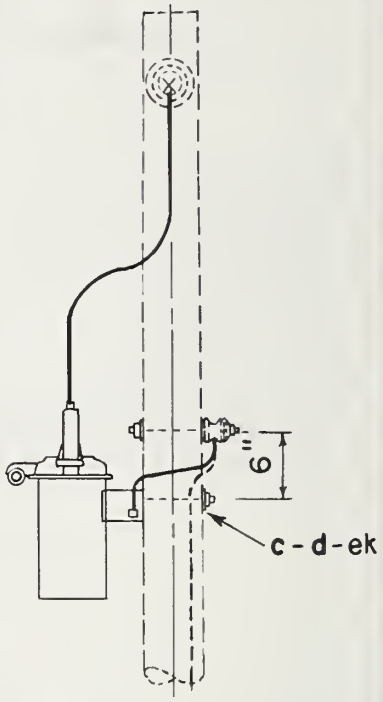
PLAN

NOTE:

The terminal bushing connected directly to the coil should be connected to the source. Where necessary to provide for this connection the recloser may be mounted on the other side of the pole and the neutral deadended.



ELEVATION



SIDE ELEVATION

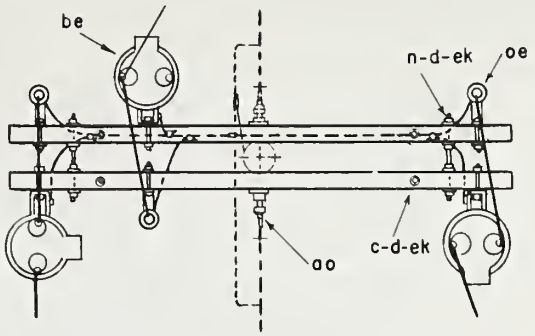
ITEM	NO. REQD	MATERIAL		ITEM	NO. REQD	MATERIAL	
C	1	Bolt, machine, 5/8" x req'd length		ae	1	Surge arrester	
d	1	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole		bv	2	Rods, armor	
p		Connectors, as required		el	1	Sectionalizer (M3-41 only)	
				ek		Locknuts, as required	
fi	2	Connector, hot line, tap assembly					
av		Jumpers, stranded, as required					
be	1	Recloser, oil circuit (M3-10 only)					

12.5/7.2 kV

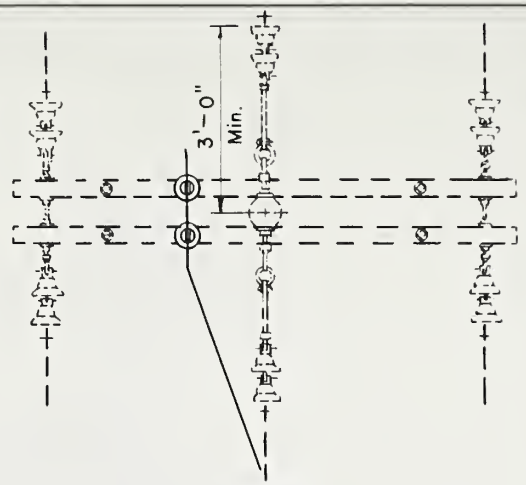
ONE SECTIONALIZER OR OIL CIRCUIT RECLOSER

Apr., 1983

M3-10, M3-41

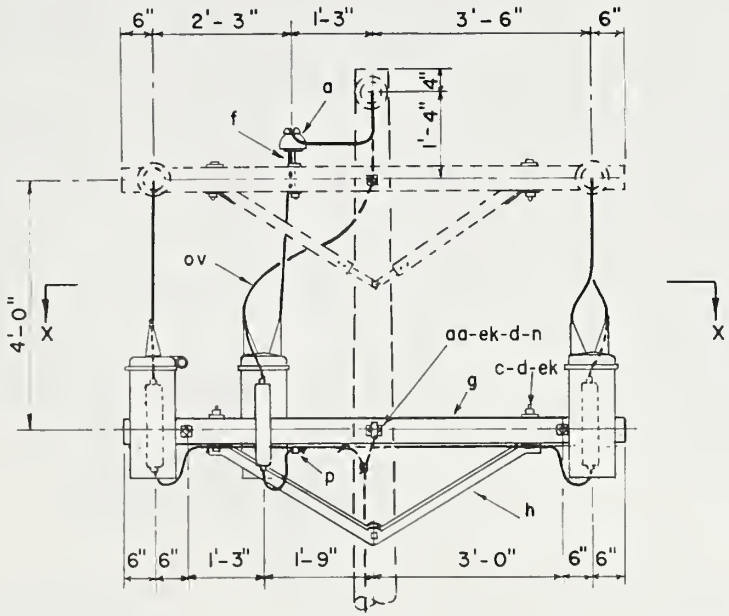


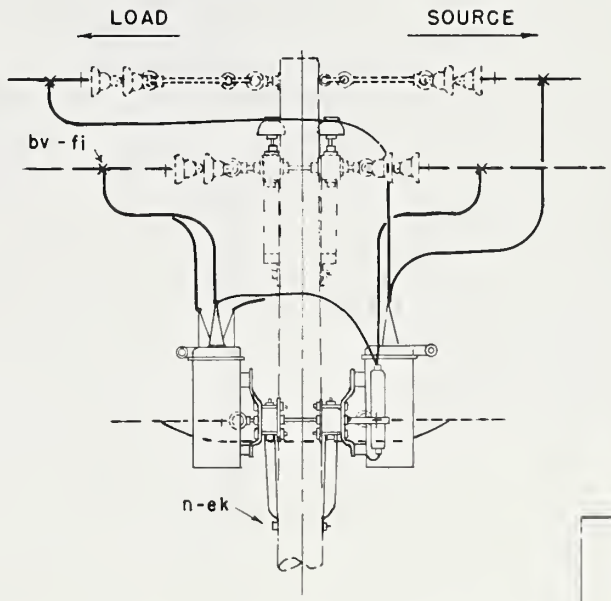
SECTION X-X



PLAN

ITEM	NO.	MATERIAL
a	2	Insulator, pin type
c	4	Bolt, machine, 1/2" x req'd. lg'th.
d	4	Washer, Rd. 1 5/8" dia. 9/16" hole
d	10	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
f	2	Pin, crossarm, steel 5/8" x 10 3/4"
g	2	Crossorm, 3 5/8" x 4 5/8" x 8'-0"
h	2	Brace, 1 1/2" x 1 1/2" x 3/16", 60" span
n	4	Bolt, double arming, 5/8" x req'd. length
p		Connectors, as req'd.
aa	1	Nut, eye, 5/8"
ae	3	Surge arrester
av		Jumpers, stranded, as req'd.
be	3	Recloser, oil circuit
bv	6	Rods, armor
ek		Locknuts, as required
fi	6	Connector, hot line, tap ossembly





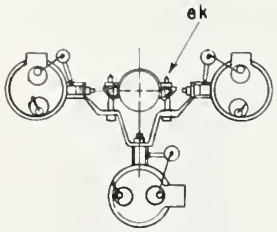
NOTES:

1. The recloser terminal bushing connected directly to the coil should be connected to the source.
2. For V-phase installotion omit center phase; adjust moteriol list and designate M3-11.
3. Eoch recloser tonk shall have two seporote connections to ground.

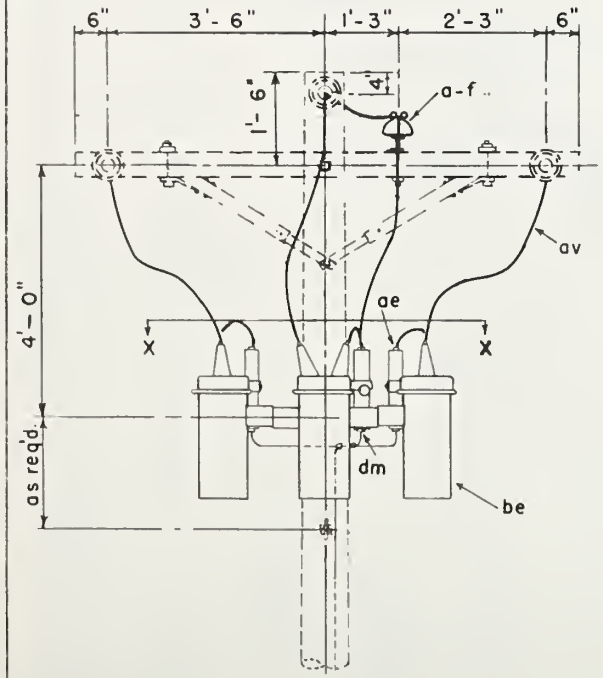
12.5/7.2 kV
2 OR 3-PHASE, THREE SECTIONALIZING
OIL CIRCUIT RECLOSERS

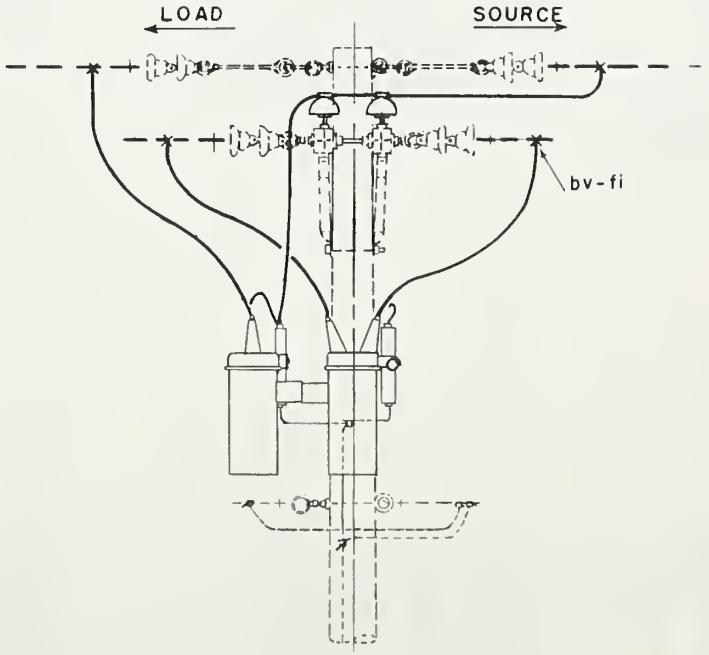
Apr., 1983

M3-11, M3-12



SECTION X-X





ITEM	No. Req'd	MATERIAL
f	2	Pin, crossarm, steel, 5/8"x10 3/4"
p		Connectors, as required
ae	3	Surge arrester
av		Jumpers, stranded, as req'd.
be	3	Recloser, oil circuit
bv	6	Rods, armor
dm	1	Bracket, cluster type
ek		Locknuts, as required
fi	6	Connector, hot line, tap assembly
p	2	Insulator, pin type

NOTES:

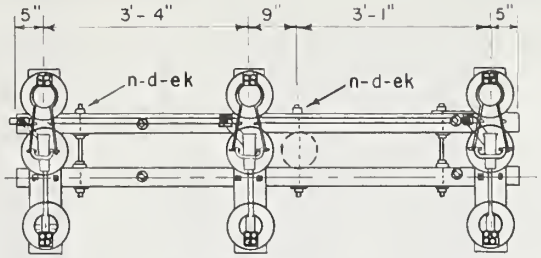
1. The recloser terminal bushing connected directly to the coil should be connected to the source.
2. For V Phase installations amit recloser and related items an center phase. Designate as assembly M3-11A
3. Each recloser tank shall have twa separate connectians ta ground.

12.5/7.2 kV

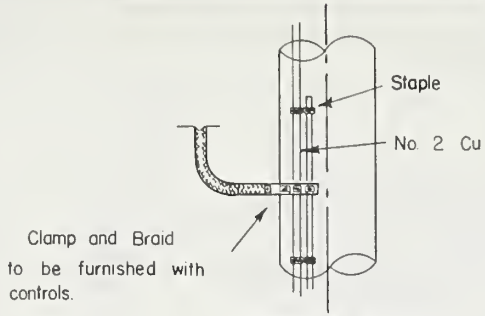
2 OR 3 SECTIONALIZING OIL CIRCUIT RECLOSERS

Apr., 1983

M3-11A, M3-12A

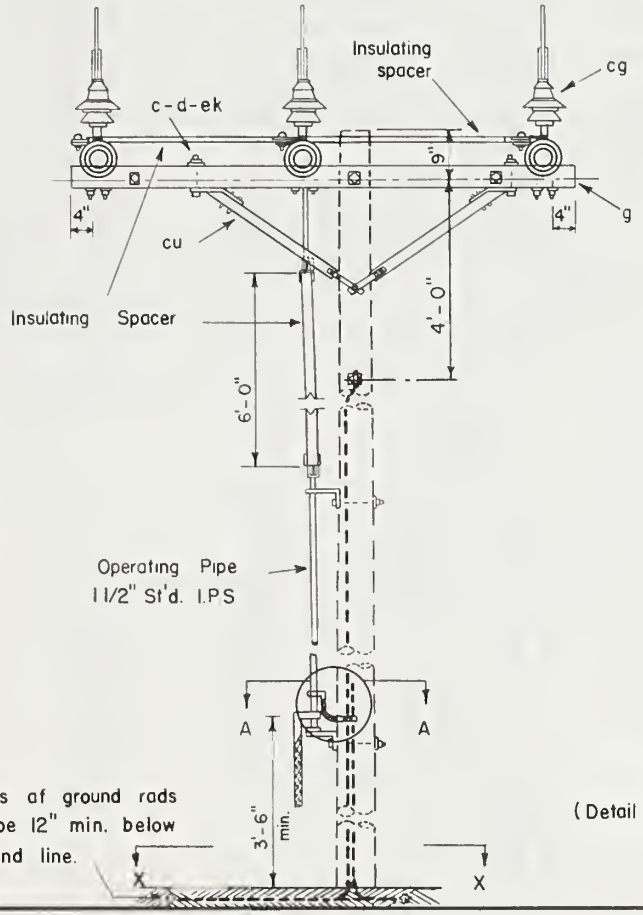


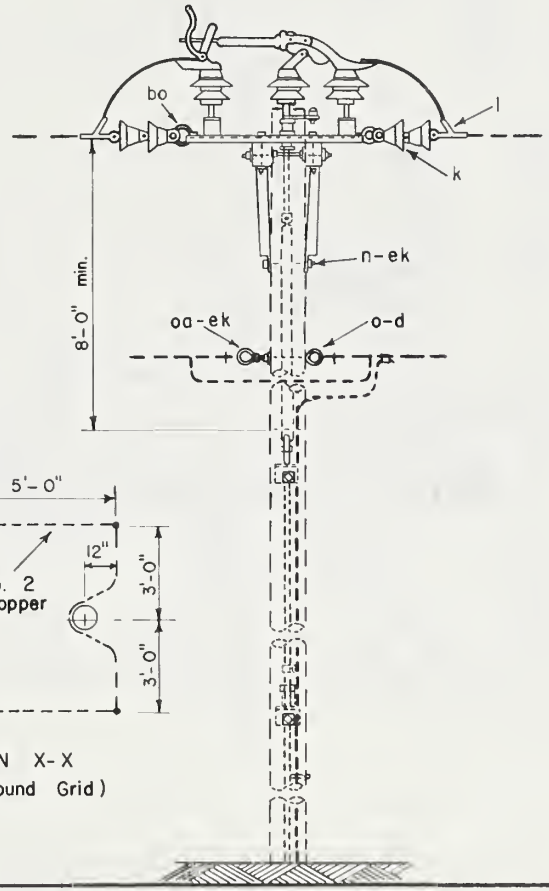
PLAN VIEW
OF SWITCH ARRANGEMENT



DETAIL OF A-A

ITEM	NO.	MATERIAL
c	14	Bolt, machine, 5/8" x req'd length
c	2	Bolt, machine, 1/2" x req'd length
d	25	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
d	4	Washer, rd., 1 3/8" dia., 9/16" hole
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"
k	12	Insulator, suspension
l	6	Clamp, deadend
n	4	Bolt, double arming, 5/8" x req'd length
bo	6	Shackle, anchor
cc	2	Deadend assembly, neutral
cg	1	Switch, airbreak, 3 pole unit 15 KV with operating mechanism, and insul. spacers
cu	2	Brace, wood, 60" span
o	1	Bolt, eye, 5/8" x required length
ek		Locknuts, as required
oa	1	Nut, eye, 5/8"





SECTION X-X
(Detail of Ground Grid)

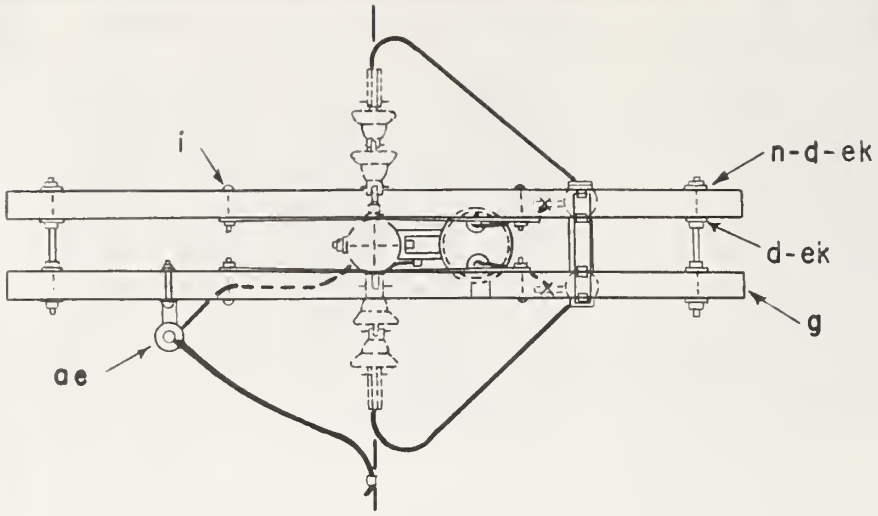
Note:
For ground assembly, see drowings M2-15 and M2-15A.

See drowings M42-3, M42-11, M42-13, M42-21 for item cc.

12.5/7.2 kV
SECTIONALIZING AIR BREAK SWITCH

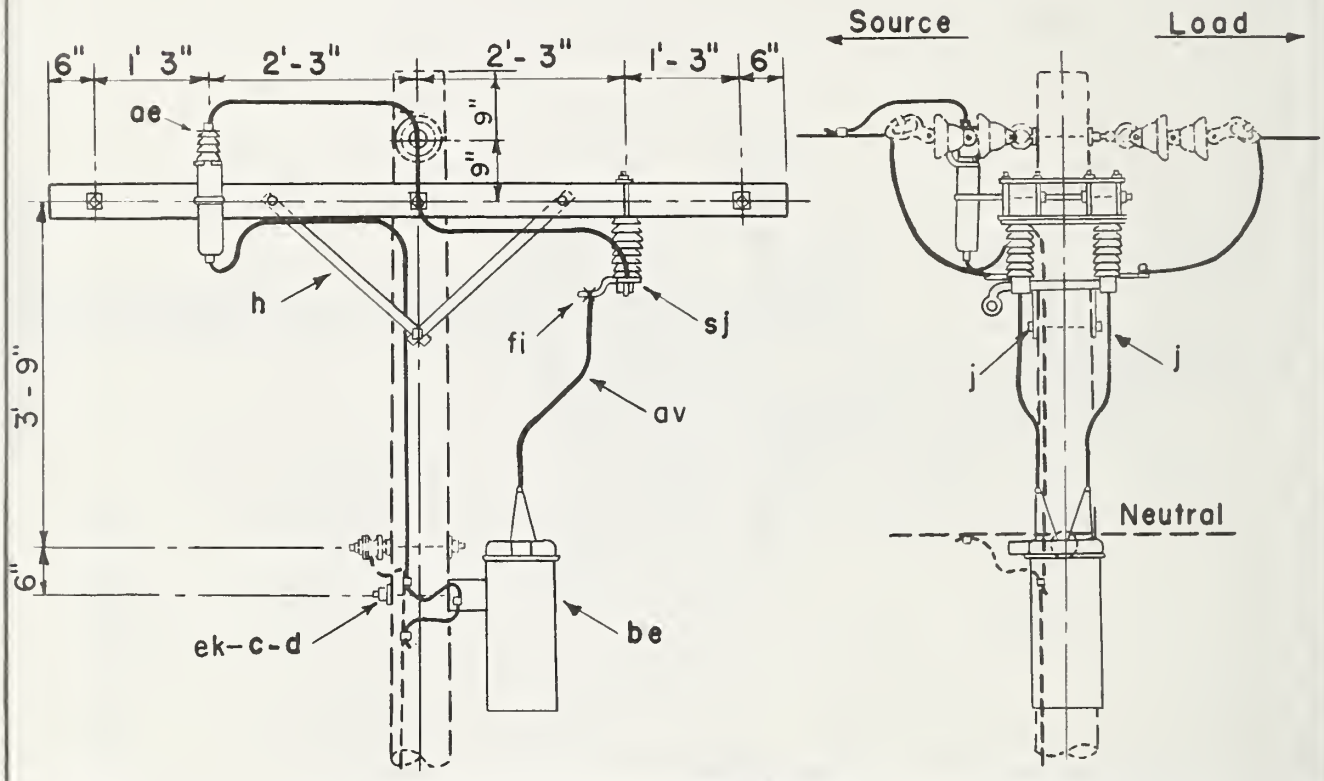
Apr., 1983

M3-15



Note:

1. The recloser terminal bushing connected directly to the coil should be connected to the source.
2. Each recloser tank shall have two separate connections to ground.



ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
c	1	Bolt, machine, 5/8" x req'd length		p		Connectors, as required	
d	11	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole					
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"		ae	1	Surge arrester	
h	4	Brace, 1 1/4" x 1/4" x 28"		fi	2	Conn., hotline, tap assembly	
i	4	Bolt, carriage, 3/8" x 4 1/2"		av		Jumpers, stranded, as required	
j	2	Screw, lag, 1/2" x 4"		be	1	Recloser, oil circuit	
n	3	Bolt, double arming, 5/8" x req'd length		ek		Locknuts, as required	
				sj	1	Switch, recloser by-pass	

12.5/7.2 kV

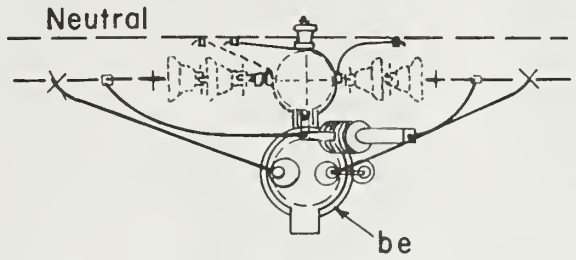
ONE SECTIONALIZING OIL CIRCUIT RECLOSER WITH BY PASS SWITCH

Apr., 1983

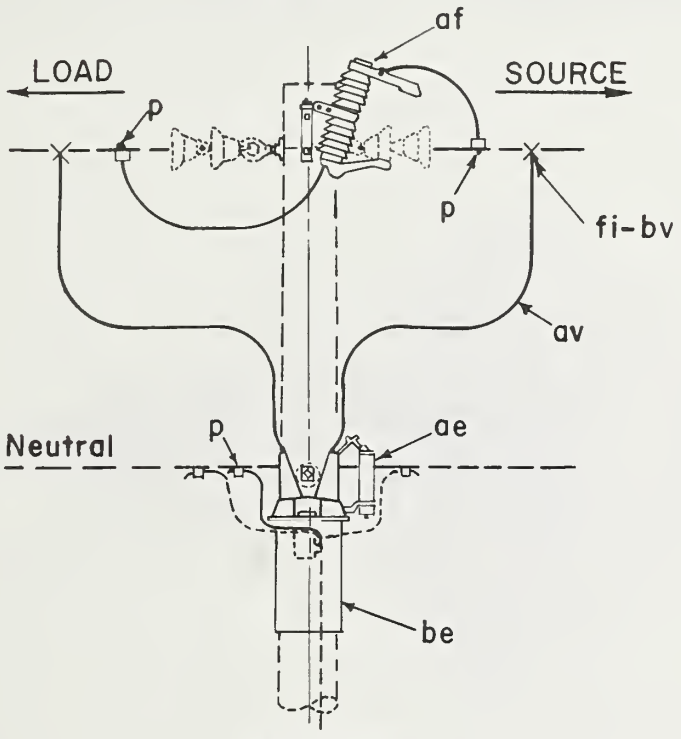
M3-23

NOTE:

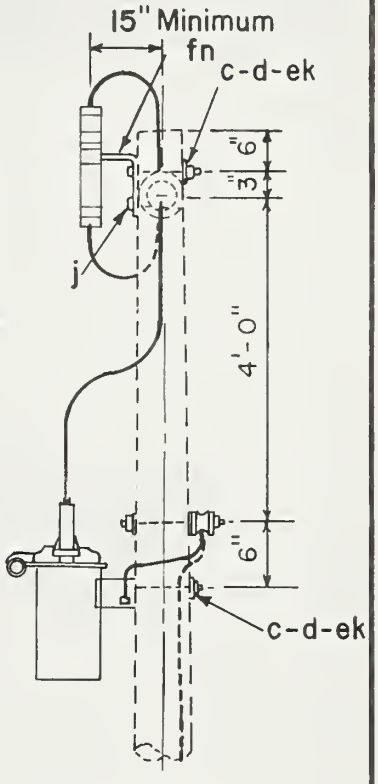
The terminal bushing connected directly to the coil should be connected to the source. Where necessary to provide for this connection the recloser and cutout may be mounted on the other side of the pole and the neutral deadended.



PLAN



ELEVATION



SIDE ELEVATION

NOTES:

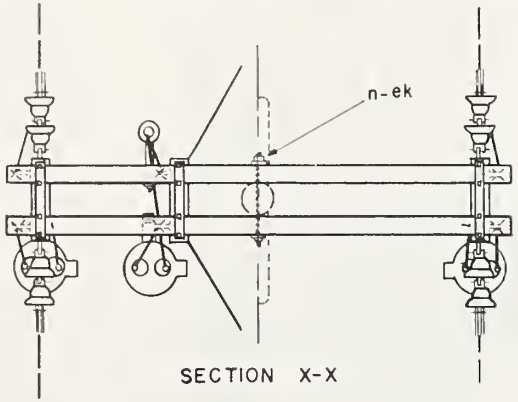
1. Mount cutout so that exhaust blast of arc is directed away from linemen
2. At borrower's option, cutout may be mounted on opposite side of pole.

ITEM	NO REQD	MATERIAL	ITEM	NO REQD	MATERIAL
c	2	Bolt, machine, 5/8"x req'd length	ae	1	Surge arrester
d	2	Washer, 2 1/4" x 2 1/4" x 3/16" x 13/16" hole			
p		Connectors, as required	bv	2	Armor rods
fn	1	Bracket, extension, L type	ek		Locknuts, as required
fi	2	Connector, hot line, tap assembly	j	1	Screw lag, 1/2" x 4"
av		Jumpers, stranded, as required	af	1	Cutout
be	1	Recloser, oil circuit			

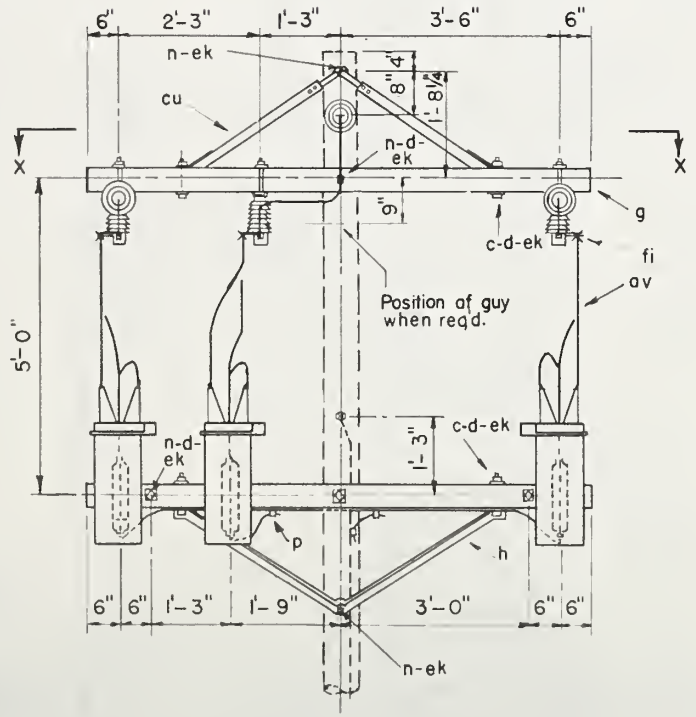
12.5/7.2 kV
OIL CIRCUIT RECLOSER WITH BYPASS CUTOUT

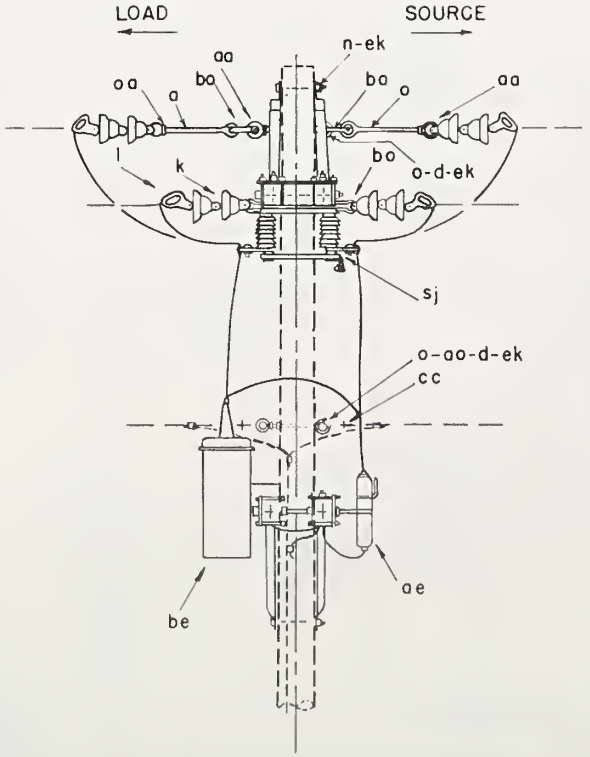
Apr., 1983

M3-23A



SECTION X-X





ITEM	NO.	MATERIAL
c	8	Bolt, machine, ½" x required length
d	16	Washer, 2¼" x 2¼" x 3/16", 13/16" hole
d	8	Washer, Rd. 1⅜" dia., 9/16" hole
g	4	Crossarm, 3⅝" x 4⅝" x 8'-0"
h	2	Brace, 1½" x 1½" x 3/16", 60" span
k	12	Insulator, suspension
l	6	Clamp, deadend
n	6	Bolt, double orming, ⅝" x req'd lg'th.
p		Connectors, as required
aa	4	Nut, eye, ⅝"
ae	3	Surge orrester
av		Jumpers, stranded, as required
bo	6	Shockle, anchor
be	3	Recloser, oil circuit
cc	2	Deadend assembly, neutral
cu	2	Brace, crossarm, wood, 60" span
sj	3	Switch, recloser by-pass
fi	6	Connector, hot line, tap assembly
o	4	Bolt, eye, ⅝" x req'd length
ek		Locknuts, as required

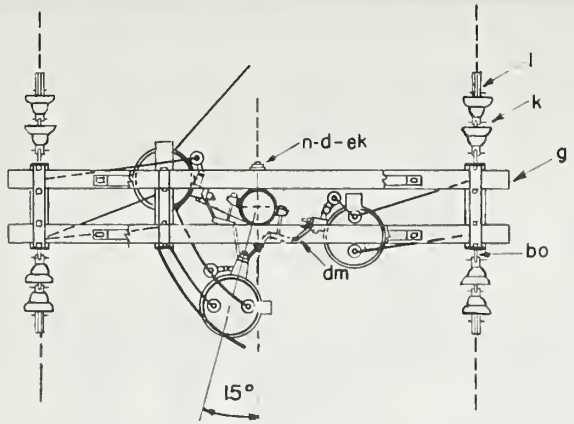
Notes:

1. The recloser terminal bushing connected directly to the coil should be connected to the source.
2. For V-Phase installations omit recloser and related items an center phase. Designate as assembly M3-24.
3. Each recloser tank shall have two separate connections to ground
4. See drowings M42-3, M42-11, M42-13, M42-21 for item cc.

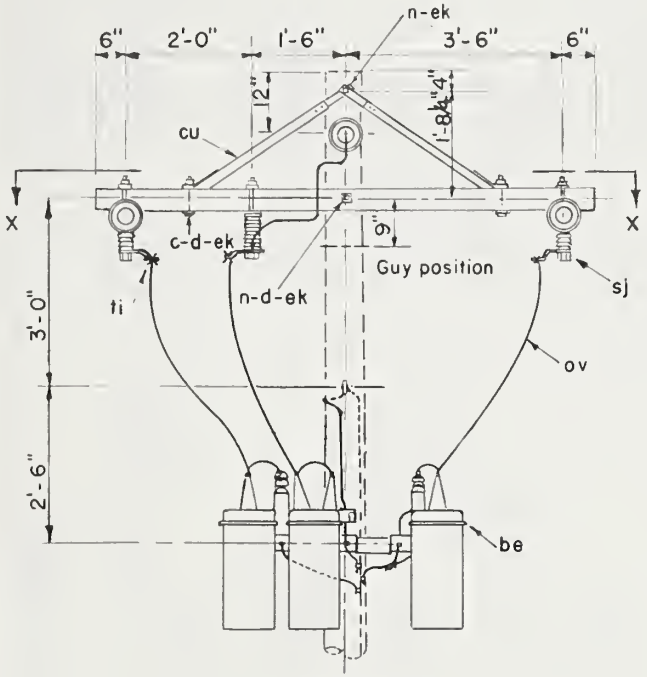
12.5/7.2 kV
2 OR 3 SECTIONALIZING OIL CIRCUIT RECLOSERS
WITH BY-PASS SWITCHES

Apr., 1983

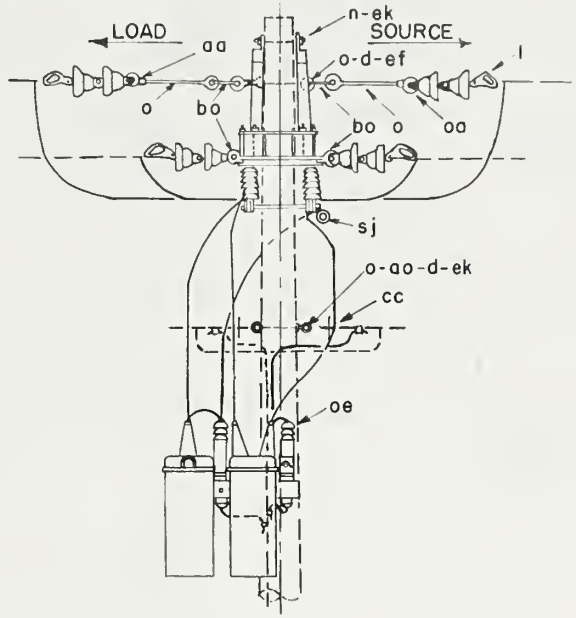
M3-24, M3-25



SECTION X-X



ELEVATION



ITEM	NO	MATERIAL
c	4	Bolt, machine, 1/2" x req'd. length
d	4	Washer, 2¼" x 2¼" x 3/16", 13/16" hole
d	4	Washer, Rd, 1⅜" dia., 9/16" hole
g	2	Crossarm, 3⅝" x 4⅞" x 8'-0"
k	12	Insulator, suspension
l	6	Clamp, deadend
n	2	Bolt, double arming, ⅝" x req'd. lg'th.
p		Connectors, as required
oo	4	Nut, eye ⅝"
oe	3	Surge arrester
av		Jumpers, stranded, as req'd.
fi	6	Connector, hotline, tap assembly
be	3	Recloser, oil circuit
bo	6	Shackle, anchor
cc	2	Deadend assembly, neutrol
cu	2	Brace, crossarm, wood, 60" span
dm	1	Bracket, cluster type
sj	3	Switch, recloser by-poss
o	4	Bolt, eye, ⅝" x req'd length
ek		Locknuts, as required

Notes:

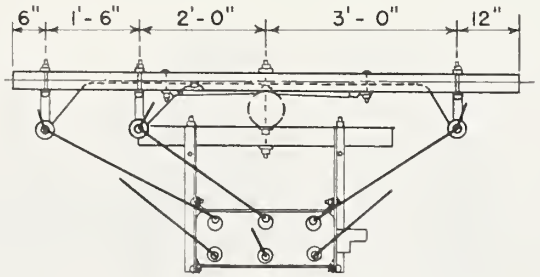
1. The recloser terminal bushing connected directly to the coil should be connected to the source.
2. For V-Phase installations omit recloser and related items on center phase. Designate as assembly M3-24A.
3. Each recloser tank shall have two separate connections to ground.
4. See drawings M42-3, M42-11, M42-13, M42-21 for item cc.

12.5/7.2 kV

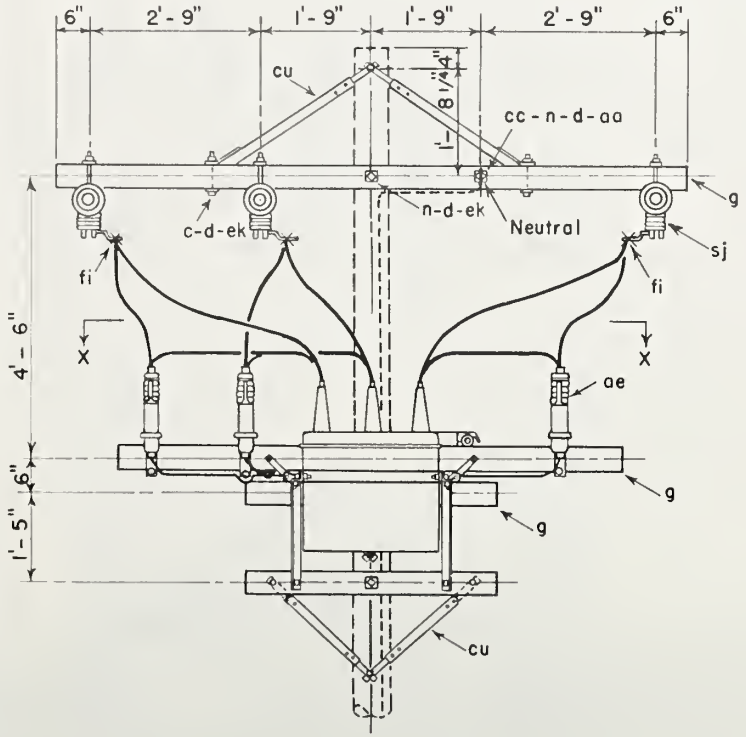
2 OR 3 SECTIONALIZING OIL CIRCUIT RECLOSERS WITH BY-PASS SWITCHES

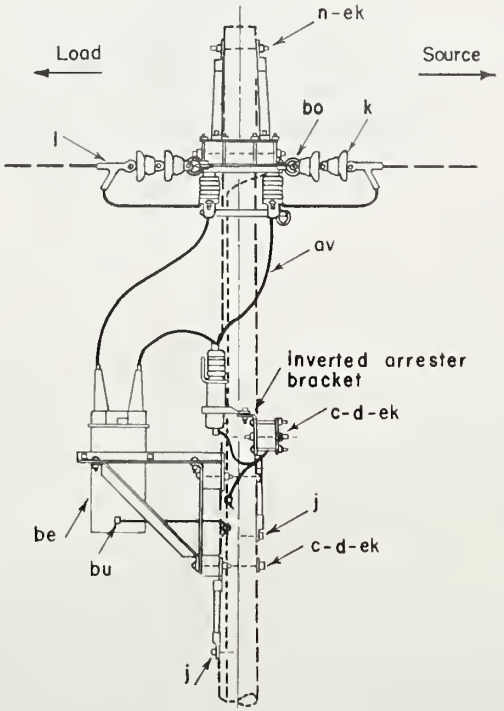
Apr., 1983

M3-24A, M3-25A



SECTION XX





ITEM	NO.	MATERIAL
c	3	Bolt, machine, 5/8"x req'd. length
c	4	Bolt, machine, 1/2" x req'd. length
d	12	Washer, 2 1/4" square
d	4	Washer, round, 1 3/8" diameter
g	2	Crossarm, 3 5/8"x 4 5/8"x 10'-0"
g	1	Crossarm, 3 5/8"x 4 5/8"x 8'-0"
g	2	Crossarm, 3 5/8"x 4 5/8"x 4'-0"
k	12	Insulator, suspension
l	6	Clamps, deadend
j	2	Screw, lag, 5/8"x req'd. length
n	3	Bolt, double arming, 5/8"x req'd length
p		Connectors, as required
aa	2	Nut, eye, 5/8"
ae	3	Surge arrester
av		Jumpers, stranded, as required
be	1	Recloser, oil circuit - 3 phase
*	1	Mounting bracket for 3 phase recloser
ba	6	Shackle, anchor
bu	1	Connector, solderless
cc	2	Deadend assembly, neutral
cu	2	Brace, crossarm, wood, 60" span
cu	4	Brace, crossarm, wood, 28"
ek		Locknuts, as required
fi	6	Connector, hot line
sj	3	Switch, recloser by-pass

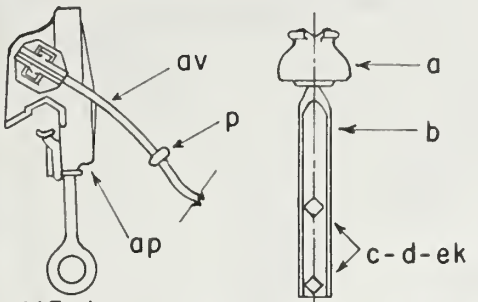
* Specify this item to be furnished by recloser manufacturer

See drawings M42-3, M42-11, M42-13, M42-21 for item cc.

THREE PHASE OIL CIRCUIT RECLOSER WITH BY-PASS SWITCHES

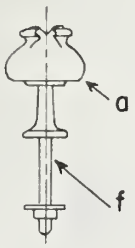
Apr., 1983

M3-30

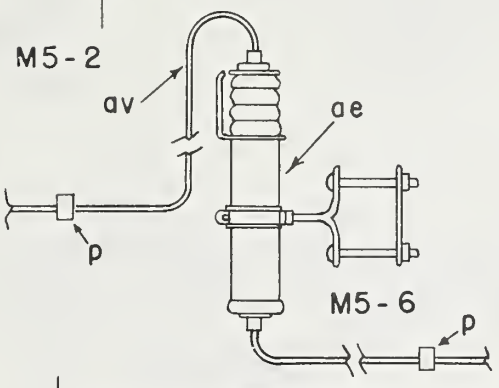


M5-1

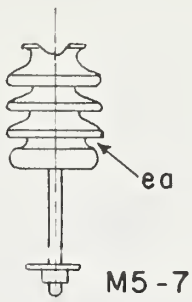
M5-2



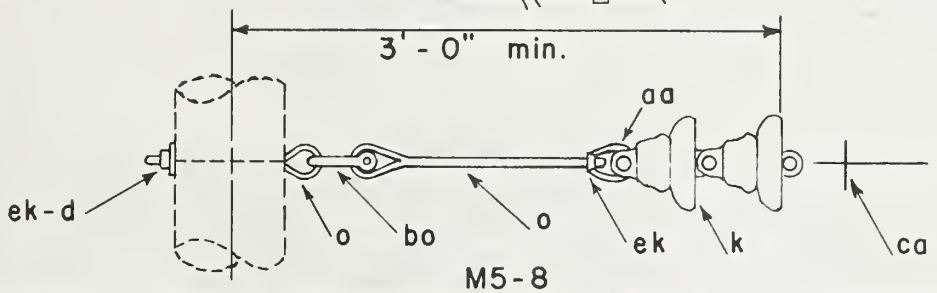
M5-5



M5-6



M5-7



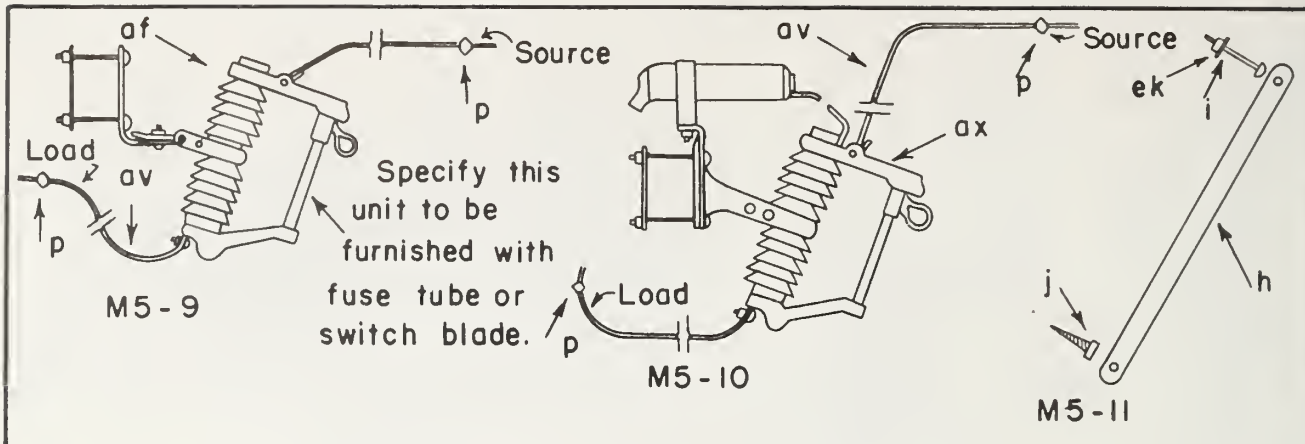
M5-8

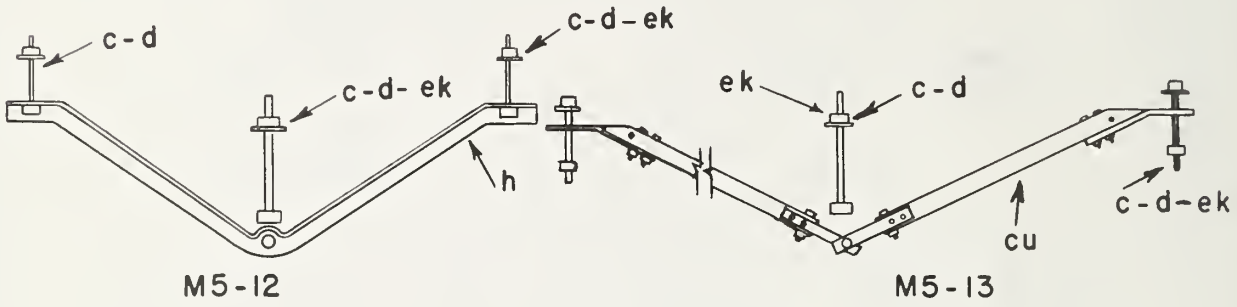
ITEM	MATERIAL	M5-1	M5-2			M5-5	M5-6	M5-7	M5-8
a	Insulator, pin type		1			1			
b	Pin, pole top, 20"		1						
c	Bolt, machine, 5/8"x req'd. length		2						
d	Washer, square, 2 1/4"		2					1	1
f	Pin, crossarm, steel, 5/8"x 10 3/4"					1			
k	Insulator, suspension								2
o	Bolt, eye, 5/8"x req'd. length								2
p	Connector	1					2		
aa	Nut, eye, 5/8"								1
ae	Lightning arrester						1		
ap	Clamp, hot line	1							
av	Jumper	1							
bo	Shackle, anchor								1
ea	Insulator, post type, 7" stud							1	
ek	Locknuts, as required								

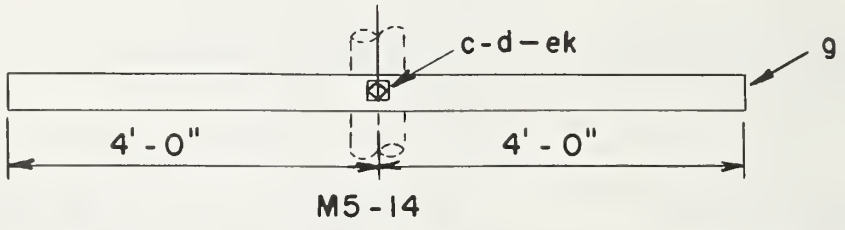
12.5/7.2 kV
MISCELLANEOUS PRIMARY ASSEMBLIES

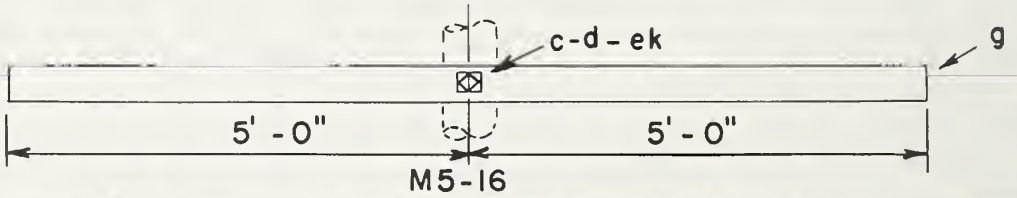
Apr., 1983

M5-1 TO 8







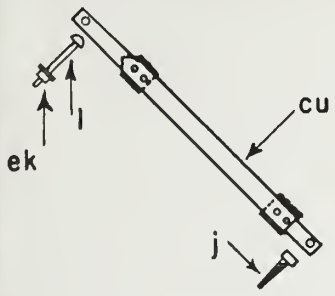


ITEM	MATERIAL	NUMBER REQUIRED							
		M5-9	M5-10	M5-11	M5-12	M5-13	M5-14		M5-16
c	Bolt, machine, 5/8" x req'd length				1	1	1		
c	Bolt, machine, 1/2" x req'd length				2	2			
d	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole				1	1	2		2
d	Washer, round 1 3/8" dia., 9/16" hole				2	2			
g	Crossarm, 3 5/8" x 4 5/8" x 8'-0"						1		
g	Crossarm, 3 5/8" x 4 5/8" x 10'-0"								1
h	Brace, flat, 1 1/4" x 1/4" x 28"			1					
h	Brace, angle, 1 1/2" x 1 1/2" x 3/16", 60" span				1				
i	Bolt, carriage, 3/8" x 4 1/2"			1					
j	Screw, lag, 1/2" x 4"			1					
p	Connector	2	2						
af	Cutout, single-shot	1							
av	Jumper	2	2						
ax	Cutout and arrester combination		1						
cu	Brace, wood, 60" span					1			
ek	Locknuts, as required								

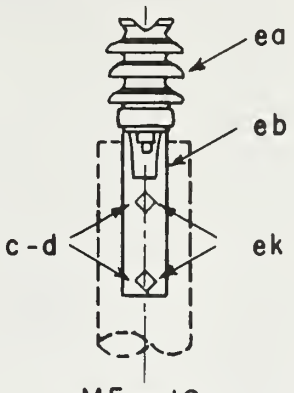
MISCELLANEOUS PRIMARY ASSEMBLIES

Apr., 1983

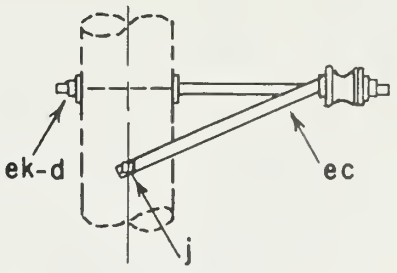
M5-9 TO 16



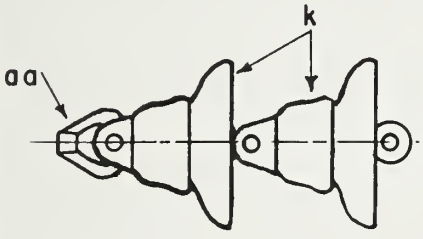
M5 – 17



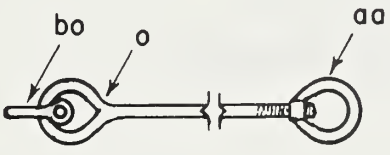
M5 – 18



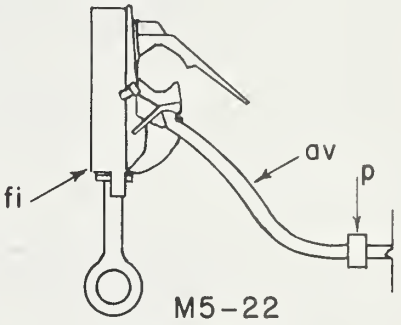
M5 – 19



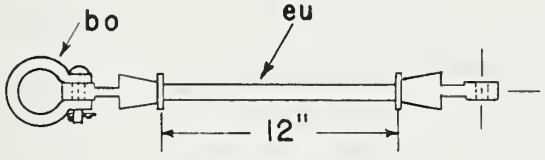
M5 – 20



M5-21



M5-22



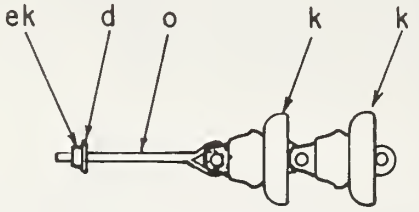
M5 - 23

ITEM	MATERIAL	M5-17	M5-18	M5-19	M5-20	M5-21	M5-22	M5-23	
c	Bolt, mochine, 5/8"x required length		2						
d	Washer, 2 1/4" squore		2	1					
i	Bolt, carriage, 3/8"x 4 1/2"	1							
j	Screw, lag, 1/2" x 4"	1		2					
k	Insulatar, suspensian				2				
ea	Insulator, past type, 1 3/4" stud		1						
eb	Brocket, for post type insulotor		1						
ec	Brocket, offset, neutral, insuloted			1					
ek	Locknuts, as required								
cu	Brace, woad, 28"	1							
aa	Eye nut				1	1			
bo	Shockle, anchor					1		1	
o	Bolt, eye, 5/8" x reqd. length					1			
fi	Connector, hot line						1		
av	Jumper						1		
p	Connector						1		
eu	Link, extension, insulated							1	

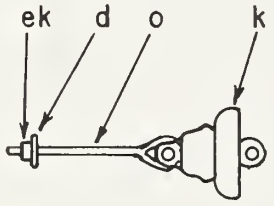
MISCELLANEOUS PRIMARY ASSEMBLIES

Apr., 1983

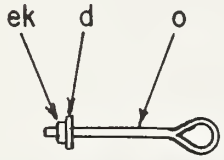
M5-17 TO 23



M5-24 (PRIMARY)



M5-26 (NEUTRAL OR SECONDARY ONLY)



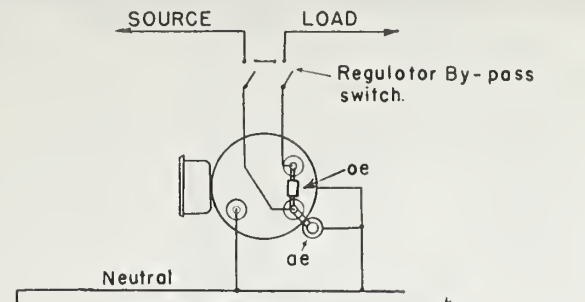
M5-25 (NEUTRAL ONLY)

ITEM	MATERIAL	M5-24	M5-25	M5-26		
d	Washer, 2 1/4" square	1	1	1		
k	Insulator, suspension	2		1		
o	Bolt, eye, 5/8" x req'd length	1	1	1		
ek	Locknuts as req'd					

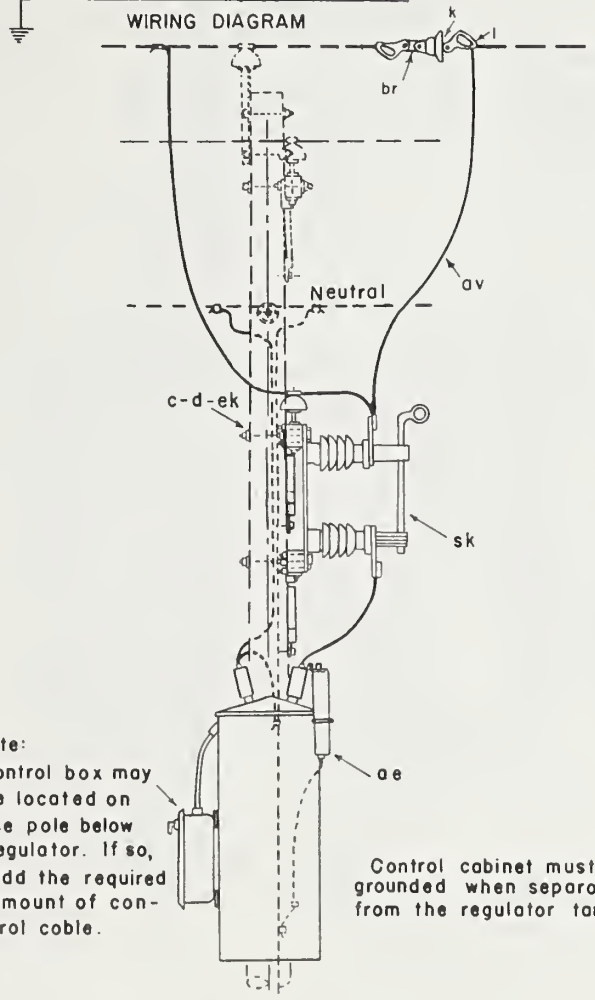
12.5/7.2 kV
MISCELLANEOUS ASSEMBLIES

Apr., 1983

M5-24 TO M5-26

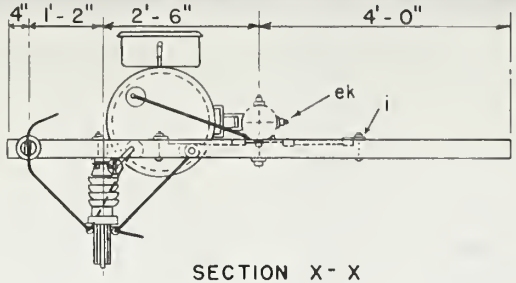


WIRING DIAGRAM

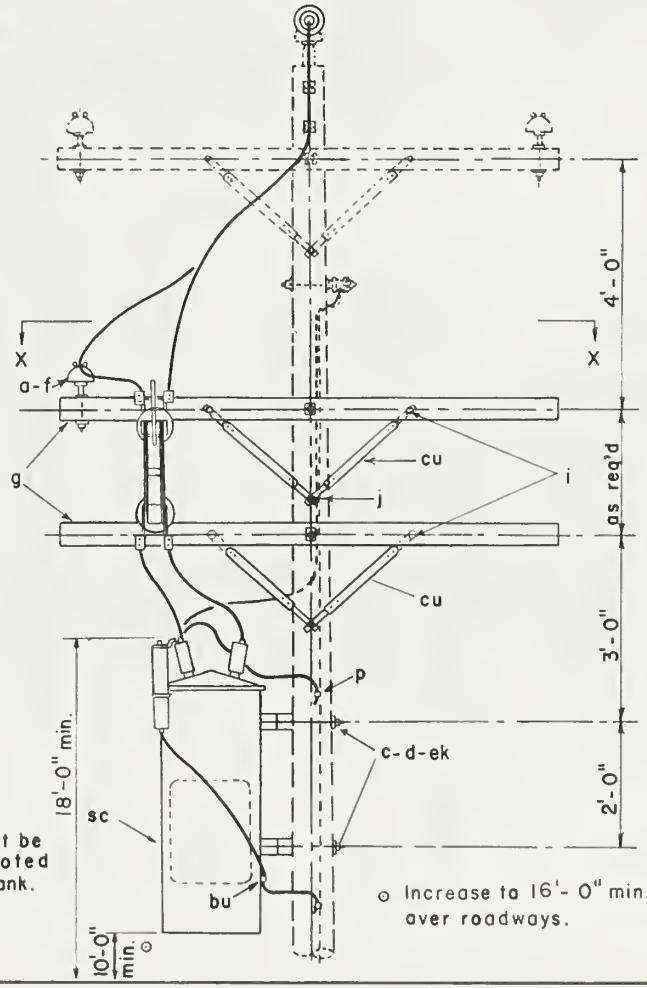


Note:
Control box may be located on the pole below regulator. If so, add the required amount of control coble.

Control cabinet must be grounded when separoted from the regulator tank.



SECTION X-X



⊙ Increase to 16'-0" min. over roadways.

ITEM	NO REQ'D	MATERIAL	
a	1	Insulator, pin type	
c	4	Bolt, machine, 1/2" x req'd length	
c	4	Bolt, machine, 5/8" x req'd length	
d	4	Washer, round, 1 3/8" dia., 9/16" hole	
d	6	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	
f	1	Pin, crossarm, 5/8" x 10 3/4"	
g	2	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	
i	4	Bolt, carriage, 3/8" x 4 1/2"	
j	2	Screw, lag, 1/2" x 4"	
k	1	Insulator, suspension	
ek		Locknuts, as required	
l	2	Clamp, deadend	
p		Connectors as required	
ae	1	Surge arrester	
oe	1	By-poss orrester	*
av		Jumpers, stranded, as required	
br	1	Chain link, 5/8" x 3 1/4"	
bu	1	Connector, grounding	*
cu	4	Brace, wood, 28"	
sc	1	Regulator, step type	
sk	1	Regulator by-poss switch	

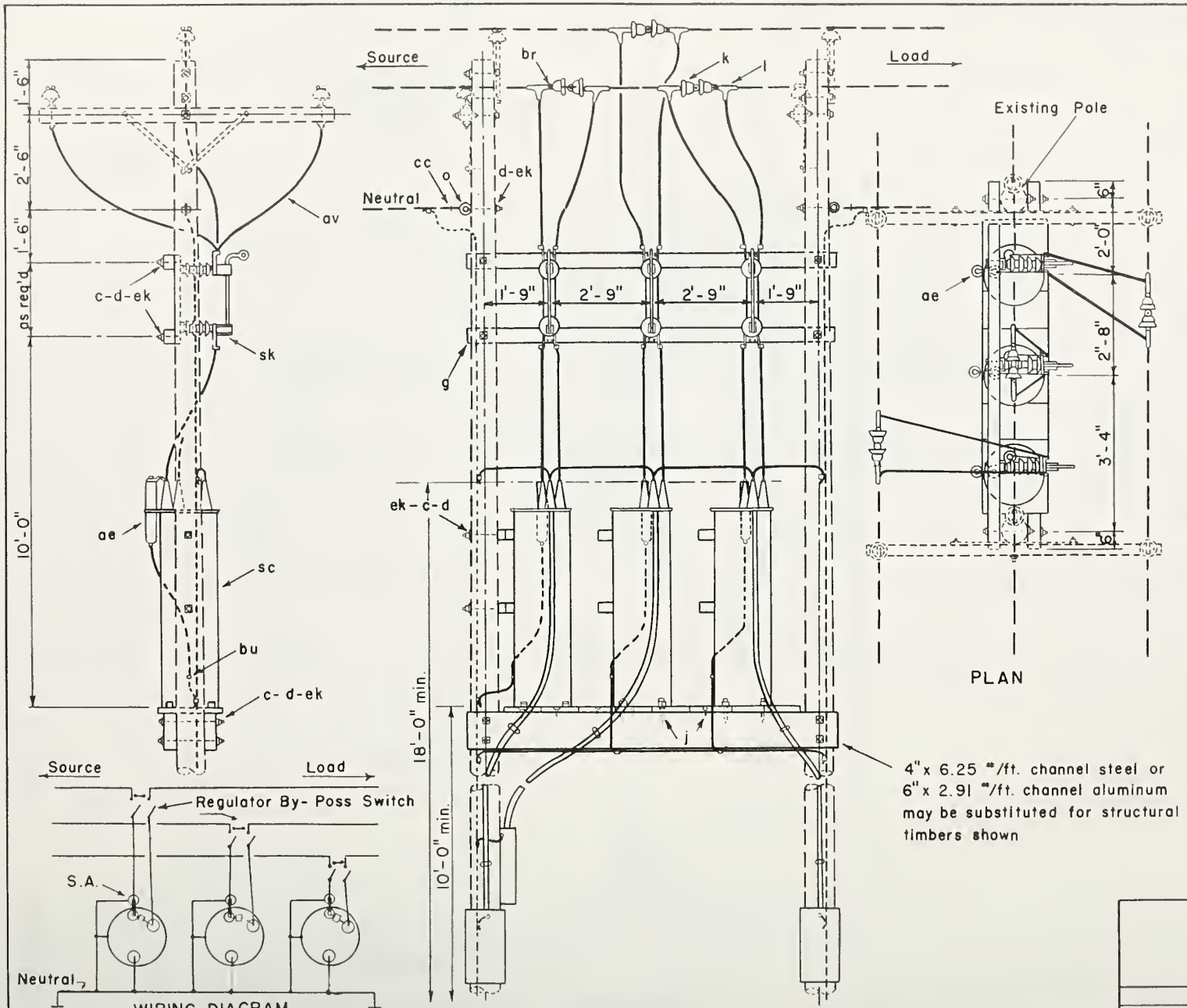
* Specify this item to be furnished by the Regulator manufacturer.

Note:
Where strength of existing pole is inadequate for regulator weight, use two pole structure as shown on drawing VM 7-1.

12.5/7.2 kV
ONE VOLTAGE REGULATOR
POLE MOUNTED

Apr., 1983

M7-11



ITEM	No. REQ'D	MATERIAL
c	6	Bolt, machine, $\frac{5}{8}$" x req'd. length
c	4	Bolt, machine, $\frac{3}{4}$" x req'd length
d	20	Washer, 2 $\frac{1}{4}$" x 2 $\frac{1}{4}$" x $\frac{5}{16}$", $\frac{13}{16}$" hole
g	2	Crossarm, 3 $\frac{5}{8}$" x 4 $\frac{5}{8}$" x 10'-0"
j		Screw lag, $\frac{1}{2}$" x 5", as req'd
j	8	Screw lag, $\frac{5}{8}$" x 6"
k	6	Insulator, suspension
l	6	Clamp, deadend
o	2	Bolt, eye, $\frac{5}{8}$" x req'd length
p		Connectors, as required
ae	3	Surge arrester *
ae	3	By-pass arrester *
av		Jumpers, stranded, as required
br	3	Chain link, $\frac{5}{16}$" x 3 $\frac{1}{4}$"
bu	3	Connector, solderless *
cc	2	Deadend assembly, neutral
sc	3	Regulator, step type
sk	3	Regulator by-poss switch
	2	Structural timber, 4"x12"x10'-0"
		Planks, 2" thick, length as req'd.
ek		Locknuts, as required
		Remote control kit with
		mounting hardware *
c	12	Bolt, machine, 1/2" x req'd. length

* Specify this item to be furnished by the regulator manufacturer.

Note: All structural timber and planks to be treated as per REA Specification DT-5B.

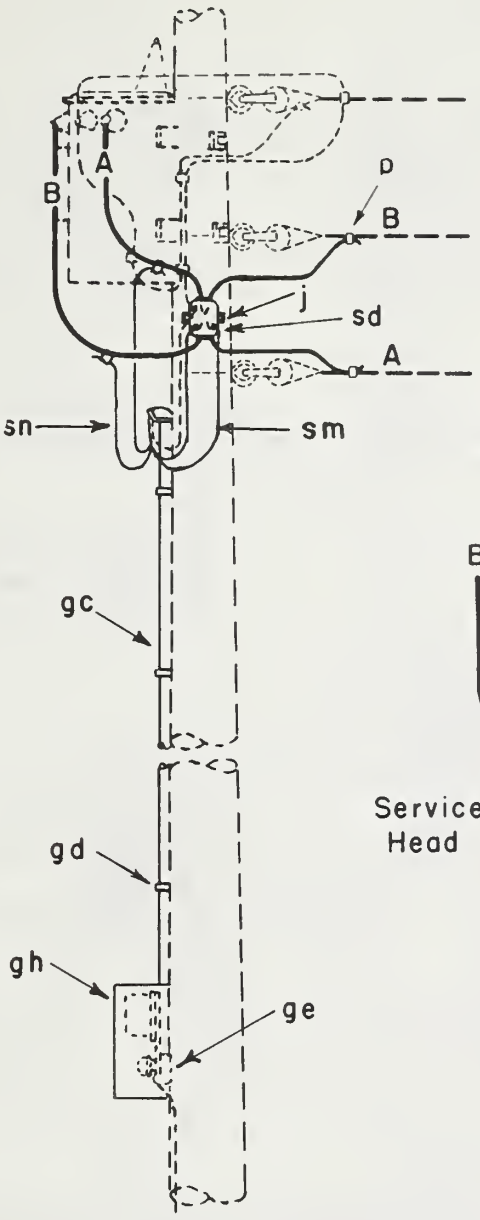
See drawings M42-3, M42-11, M42-13, M42-21 for item cc.

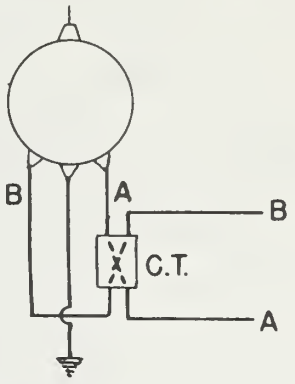
4"x 6.25 #/ft. channel steel or 6"x 2.91 #/ft. channel aluminum may be substituted for structural timbers shown

12.5/7.2 kV
THREE VOLTAGE REGULATORS
PLATFORM MOUNTED

Apr., 1983

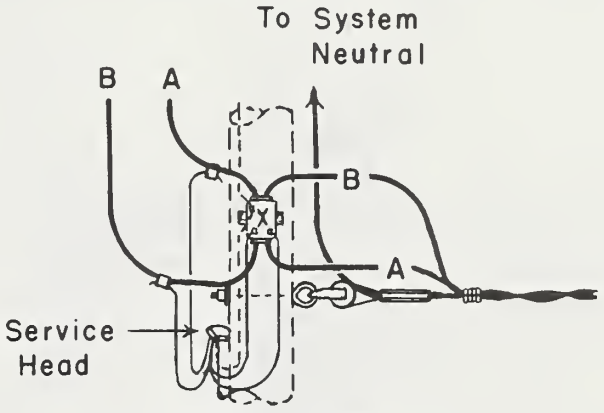
M7-13





WIRING DIAGRAM

Note: For more detailed wiring diagram, see REA Bulletin 161 – 12



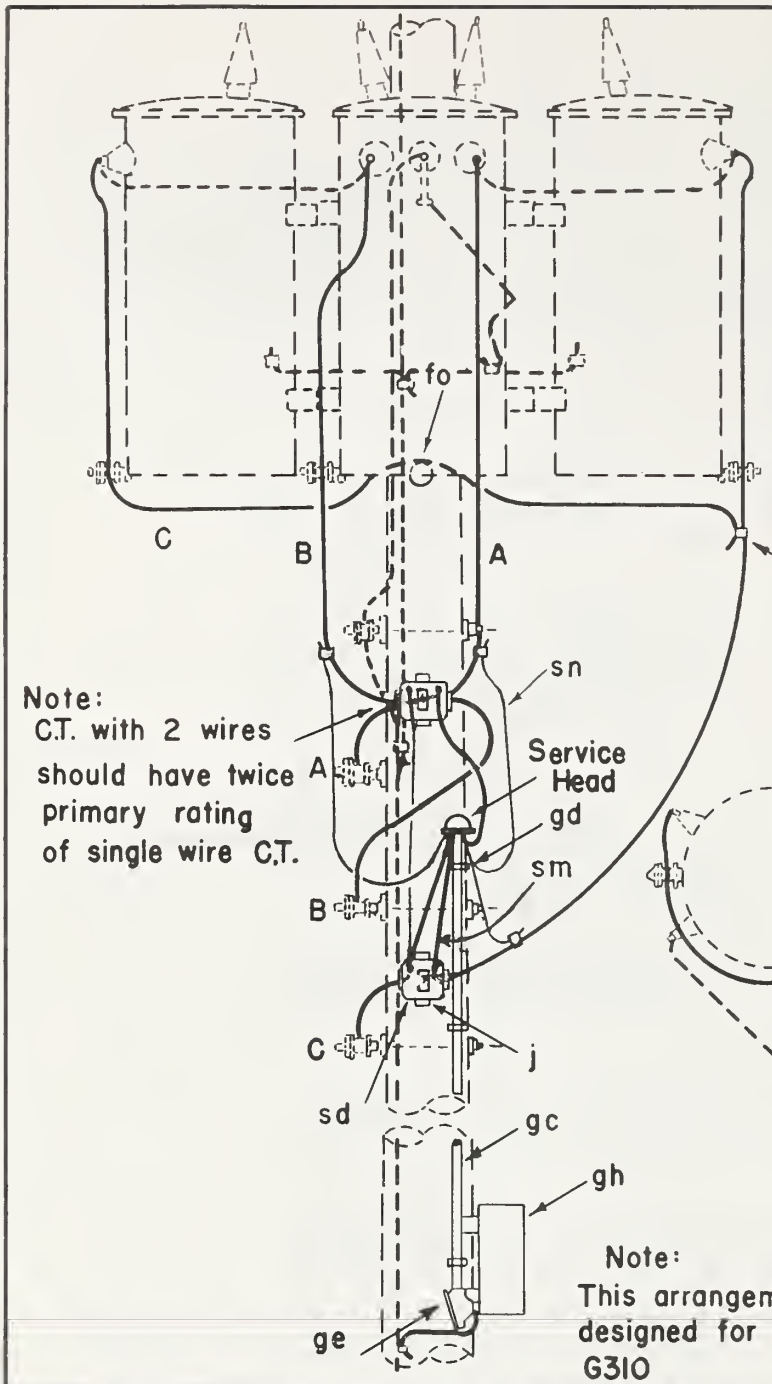
TRIPLEX SERVICE

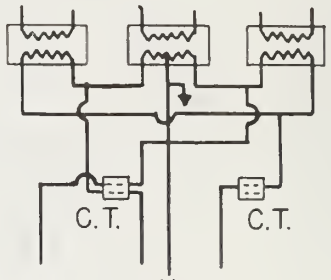
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
j	2	Screw, lag, 1/2" x 4"		sd	1	Transformer, current	
ρ		Connectors, as required		sm		Wire, No. 12, insul. for current	
gc		Conduit, 1 1/4", as required		sn		Wire, No. 14, insul. for potential	
gd		Straps, conduit, as required			1	Service head	
ge	1	Condulet, type "LB"					
gh	1	Meter box, meter and test block					

SECONDARY METERING GUIDE
SINGLE PHASE 120 / 240 VOLTS

Apr., 1983

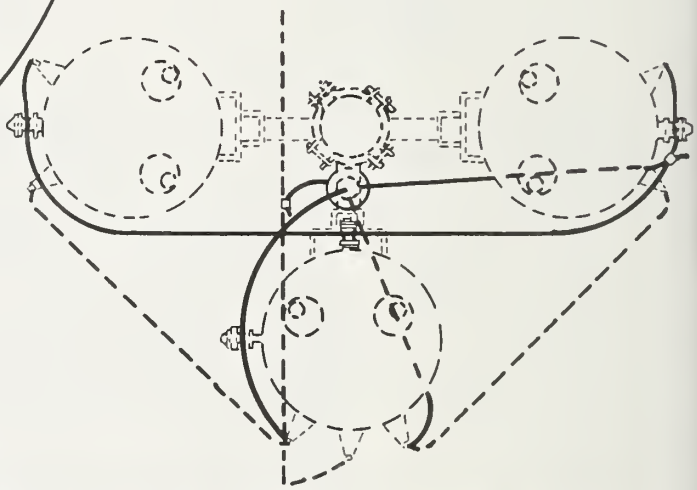
M8





WIRING DIAGRAM
FOR INSTRUMENT TRANSFORMERS

Note:
For more detailed wiring diagram, see REA Bulletin 161-12



PLAN

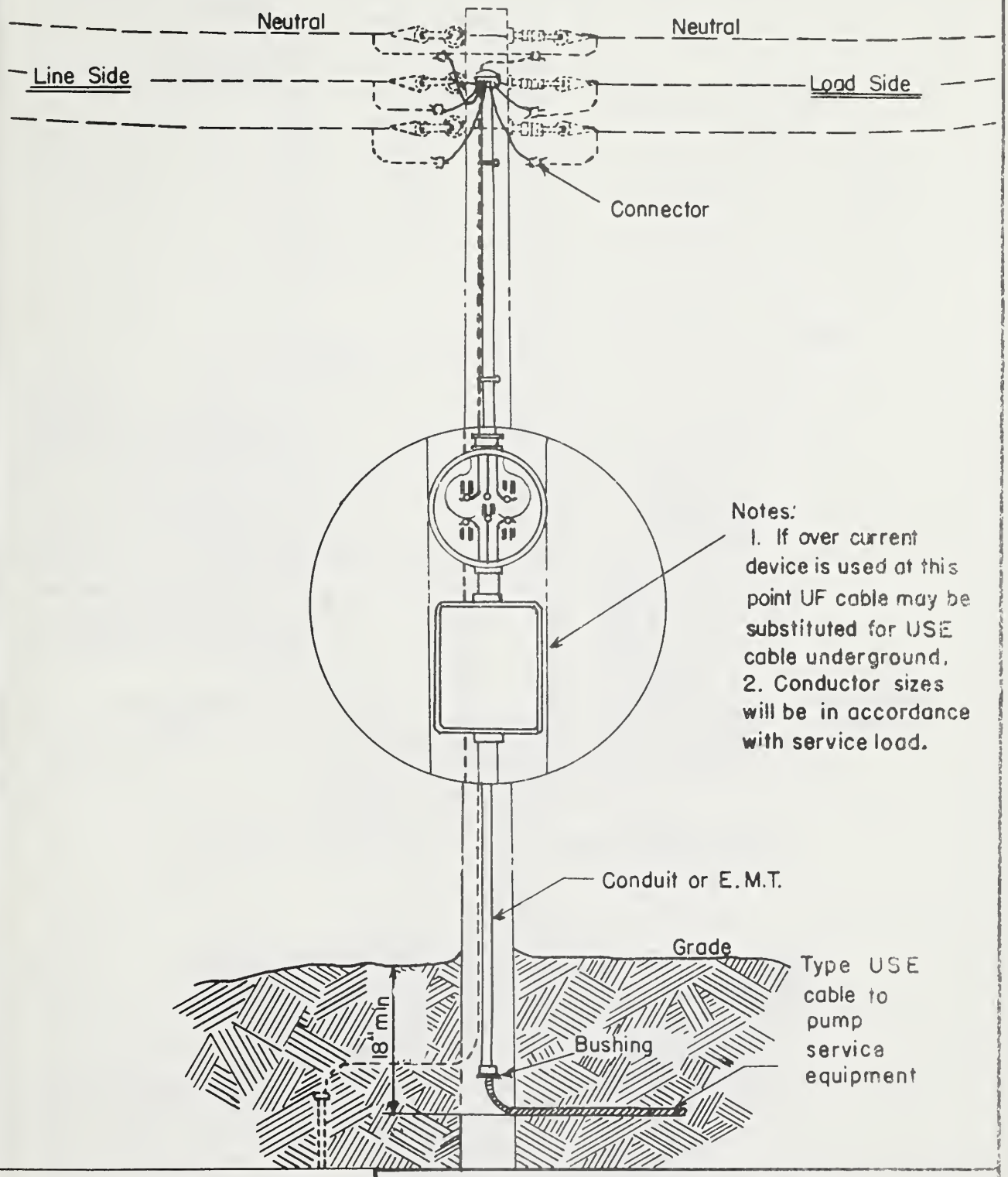
Note:
This arrangement of metering equipment is designed for use with the transformer drawings G310

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
j	4	Screw, lag, 1/2" x 4"		gh	1	Meter box, meter and test block	
p		Connectors, as required		sd	2	Transformer, current	
					1	Service Head	
gc		Conduit, 1 1/4" as required		sm		Wire, No. 12, insul. for current	
ge	1	Condulet, type "LB"		sn		Wire, No. 14, insul. for potential	
gd		Straps, conduit, as required					
fo	1	Transformer secondary bracket					

SECONDARY METERING GUIDE
THREE PHASE 120/240 VOLTS
4 WIRE DELTA

Apr., 1983

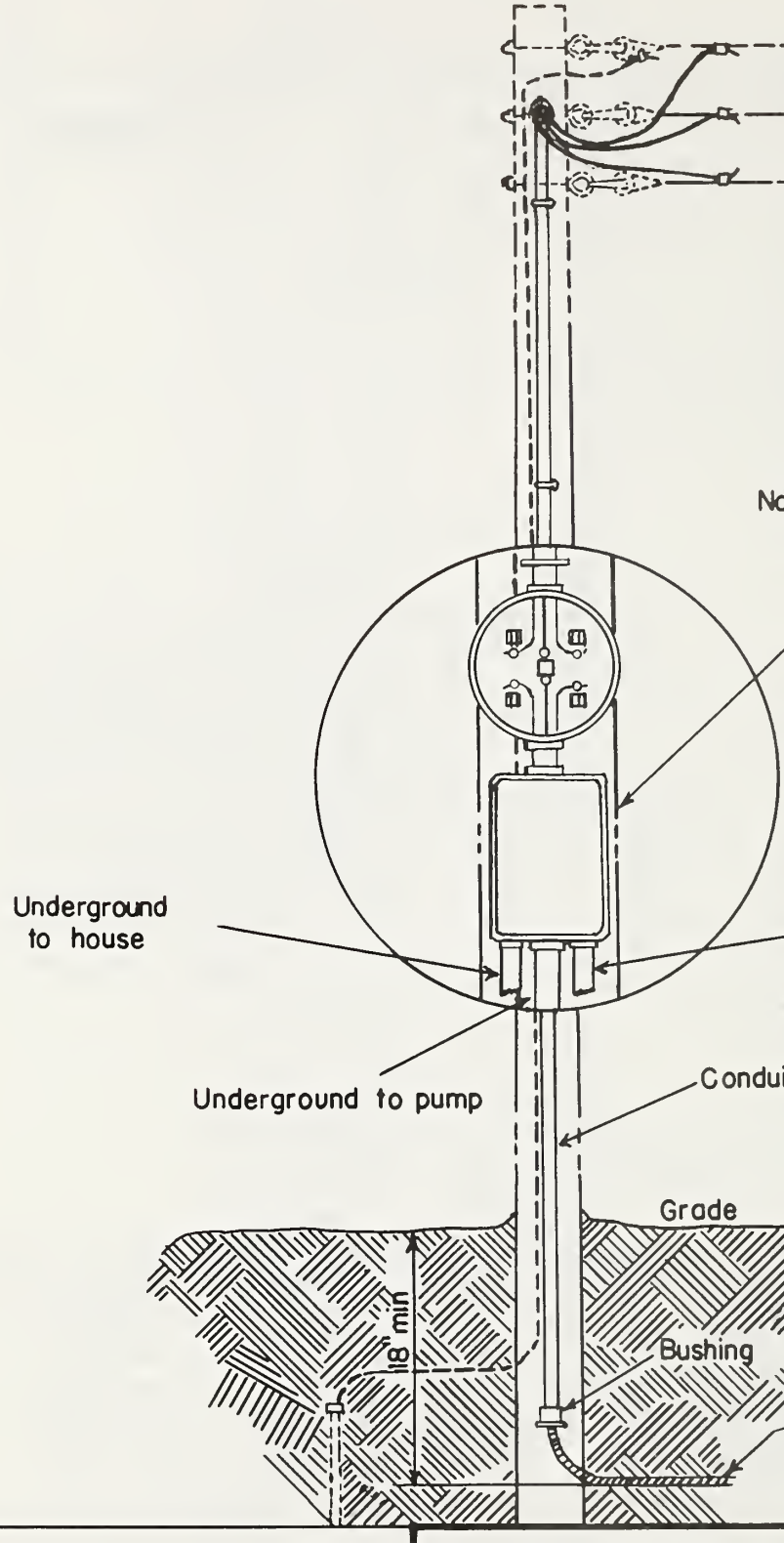
M8-6



GUIDE TO YARD POLE METER INSTALLATION
(SHOWING PUMP SERVICE CARRIED UNDERGROUND)

Apr., 1983

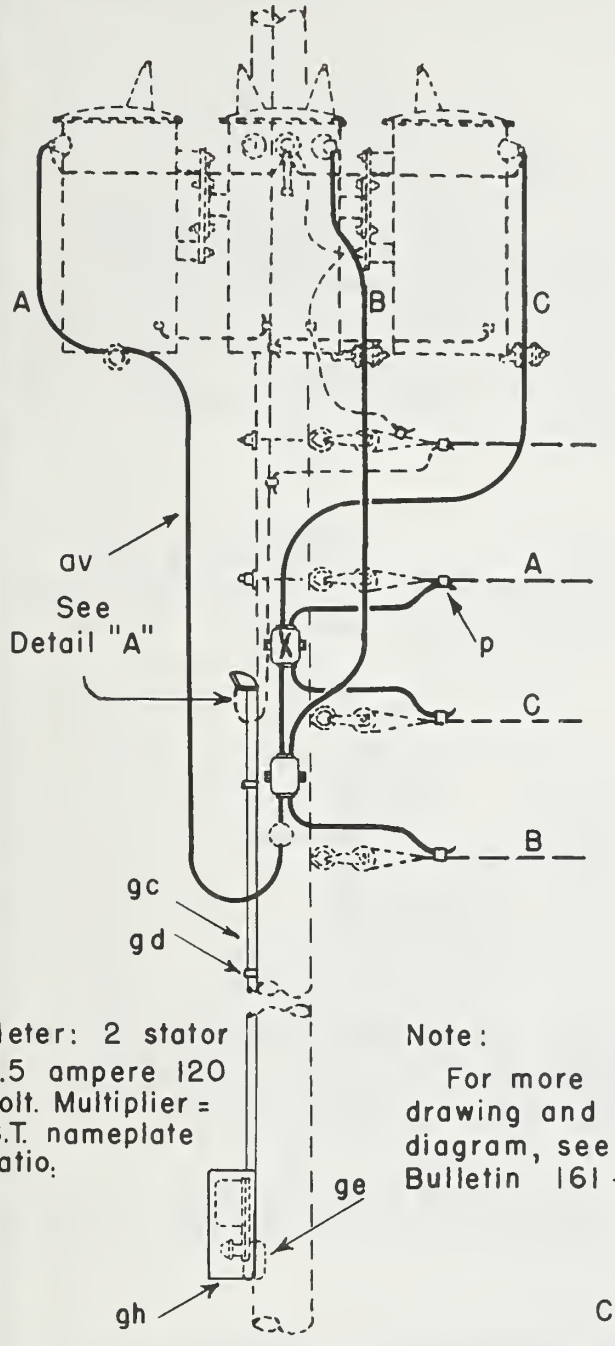
MB-9



GUIDE TO YARD POLE METER INSTALLATION
(SHOWING ALL BUILDING SERVICES CARRIED UNDERGROUND)

Apr., 1983

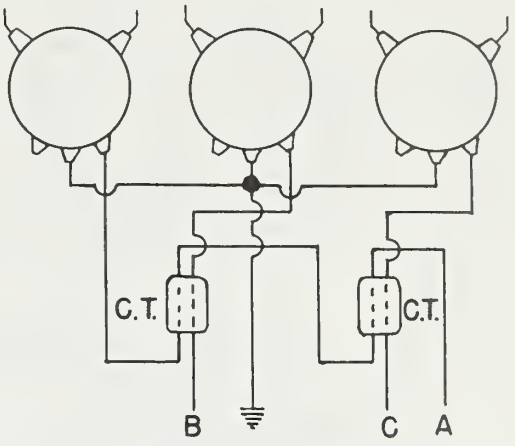
M8–10



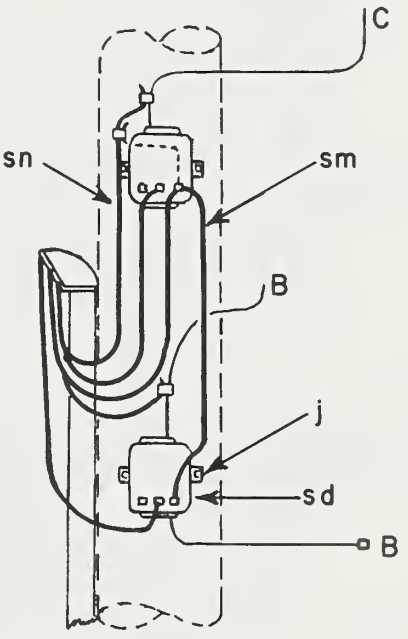
Meter: 2 stator 2.5 ampere 120 volt. Multiplier = C.T. nameplate ratio.

Note:

For more detailed drawing and wiring diagram, see REA Bulletin 161 – 12



WIRING DIAGRAM



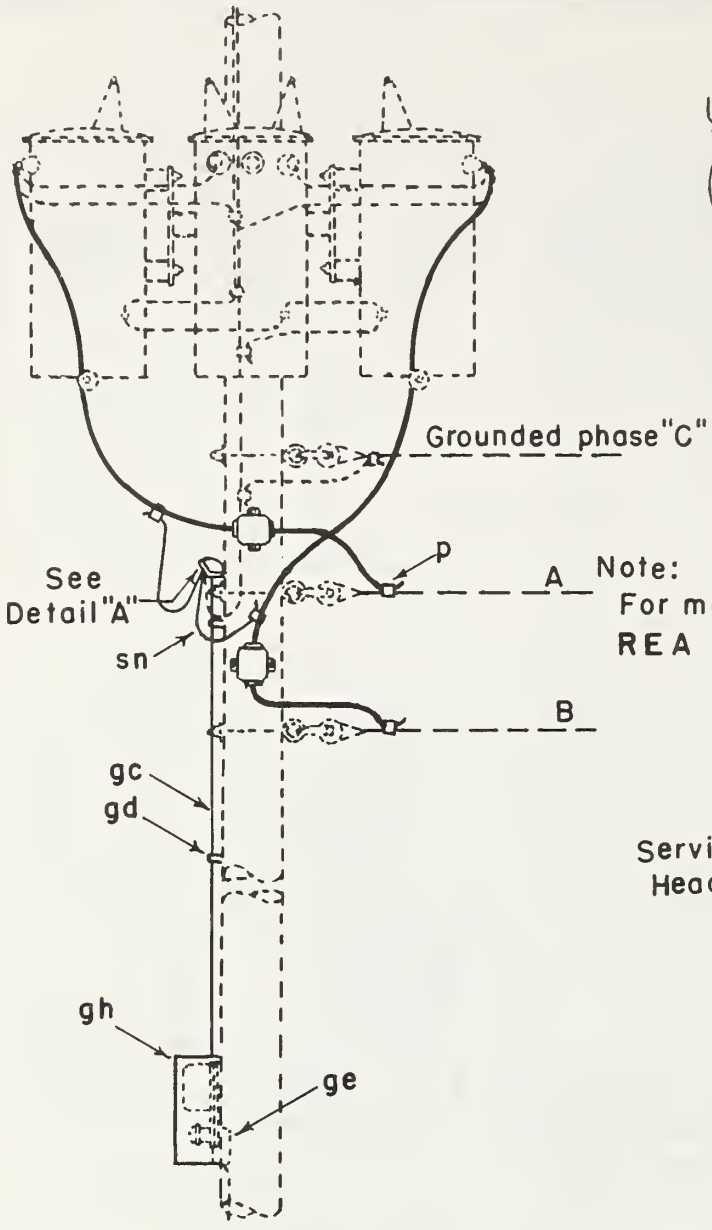
DETAIL "A"
Connections from C.T.'s. to Service Head

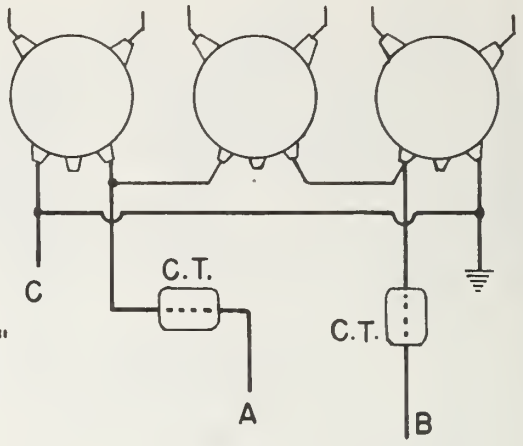
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
j	4	Screw, lag		gh	1	Meter box, meter ond test block	
p		Connectors, as required		sd	2	Tronsformer, current	
av		Jumpers, insuloted		sm		Wire, No. 12, insul. for current	
gc		Conduit, 1 1/4", as required		sn		Wire, No. 14, insul. for potential	
gd		Straps, conduit, as required			1	Service Head	
ge	1	Condulet, type "L B"					

SECONDARY METERING GUIDE
THREE PHASE, 120/208 VOLTS
4 WIRE GROUNDED WYE

Apr., 1983

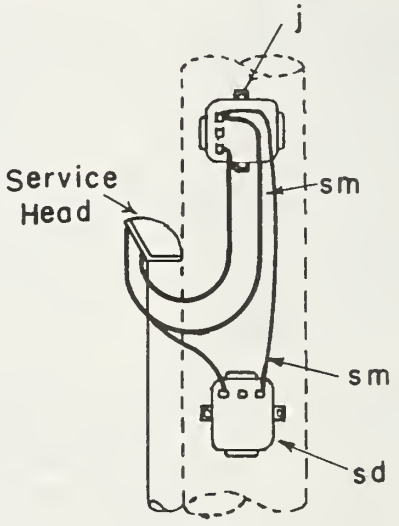
M8-11





WIRING DIAGRAM

Note: For more detailed wiring diagram, see REA Bulletin 161–12



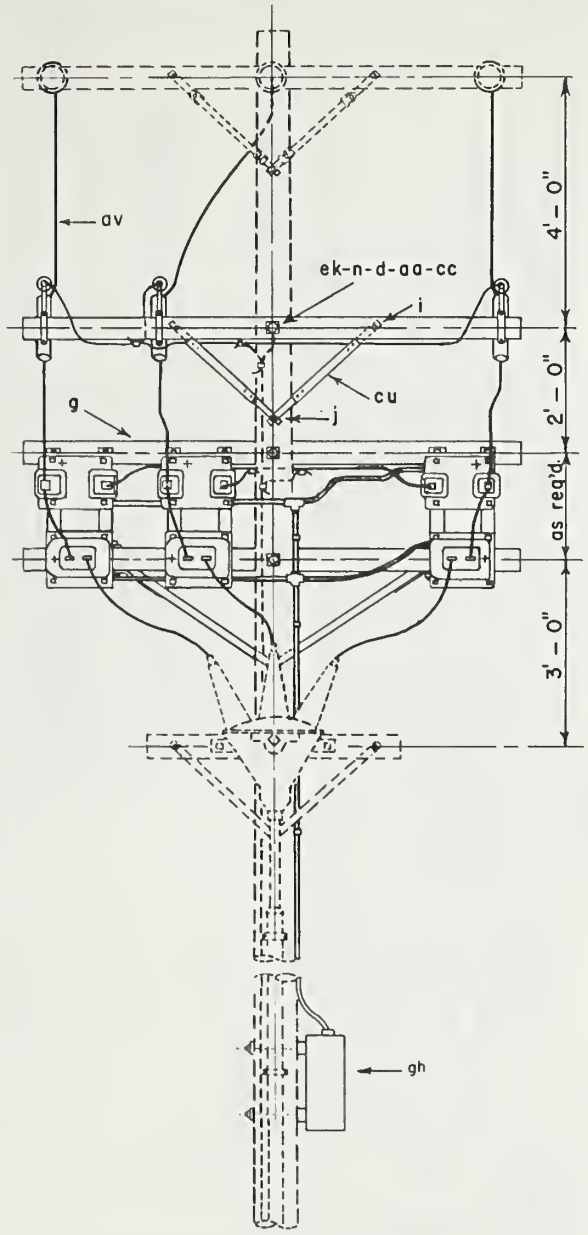
DETAIL "A"
Connections from C.T's. to Service Head

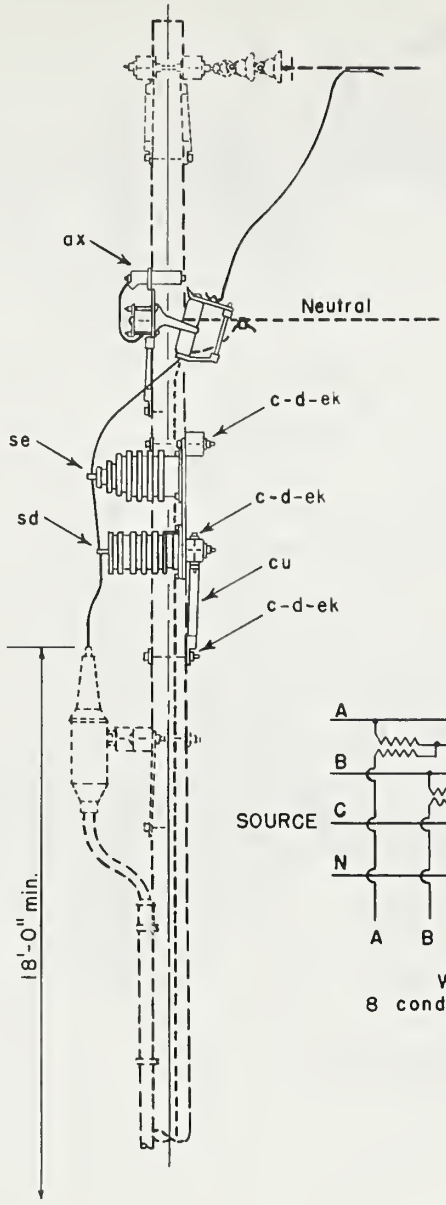
ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
j	4	Screw, lag, 1/2" x 4"		sd	2	Transformer, current	
p		Connectors, as required		sm		Wire, No. 12, insul. for current	
.	1	Service head		sn		Wire, No. 14, insul. for potential	
gc		Conduit, 1 1/4", as required		av		Jumper	
gd		Straps, conduit, as required					
ge	1	Condulet, type "LB"					
gh	1	Meter box, meter and test block					

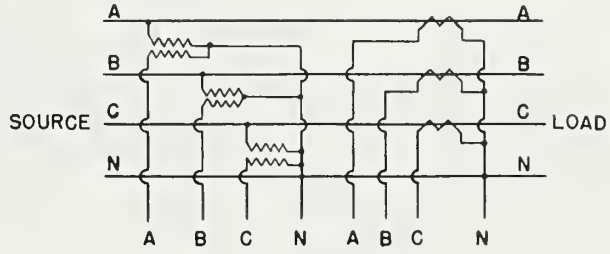
SECONDARY METERING GUIDE
THREE PHASE 240 VOLTS
3 WIRE CORNER GROUNDED DELTA

Apr., 1983

M8-12







WIRING DIAGRAM
8 conductor metering cable in conduit

ITEM	NO.	MATERIAL
c	16	Bolt, machine, 5/8"x req'd length
c	29	Bolt, machine, 1/2" x req'd. length
g	22	Washer, 2 1/4" square
d	4	Washer, round, 1 3/8" dia
g	3	Crossarm, 3 5/8"x 4 5/8" x 8'-0"
i	2	Bolt, carriage, 3/8" x 4 1/2"
j	1	Screw, lag, 1/2"x 4"
n	1	Bolt, double arming, 5/8"x req'd. length
p		Connectors, as required
aa	1	Nut, eye, 5/8"
av		Jumper, primary, bare, as required
ax	3	Cutout and arrester combination
cc	1	Deadend assembly, neutral
cu	2	Brace, wood, 28"
cu	1	Brace, wood, 60" span
gh		Meter box, meter and test block
ge		Conduits, as required
sd	3	Transformer, current
se	3	Transformer, potential
ek		Locknuts, as required
*	6	Mounting brackets
		Metering cable as required

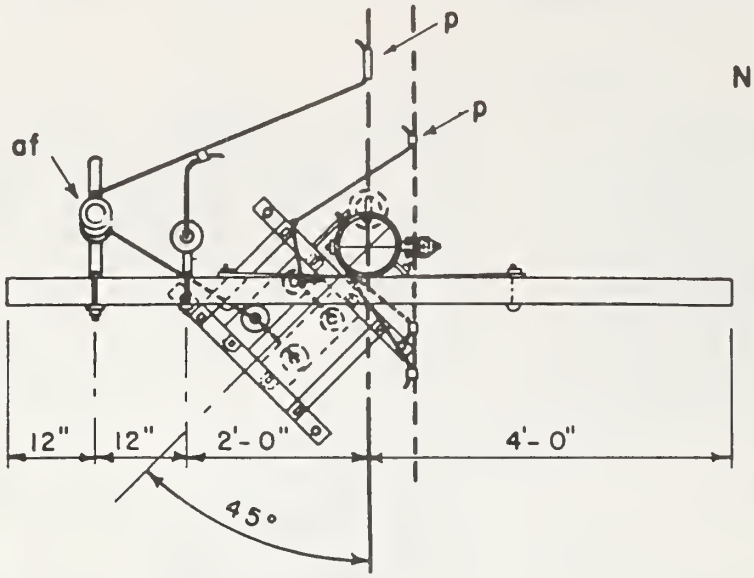
* Specify this item to be furnished by the transformer manufacturer

See drawings M42-3, M42-13, M42-21 for item cc.

12.5/7.2 kV PRIMARY METERING GUIDE
THREE PHASE 4-WIRE WYE

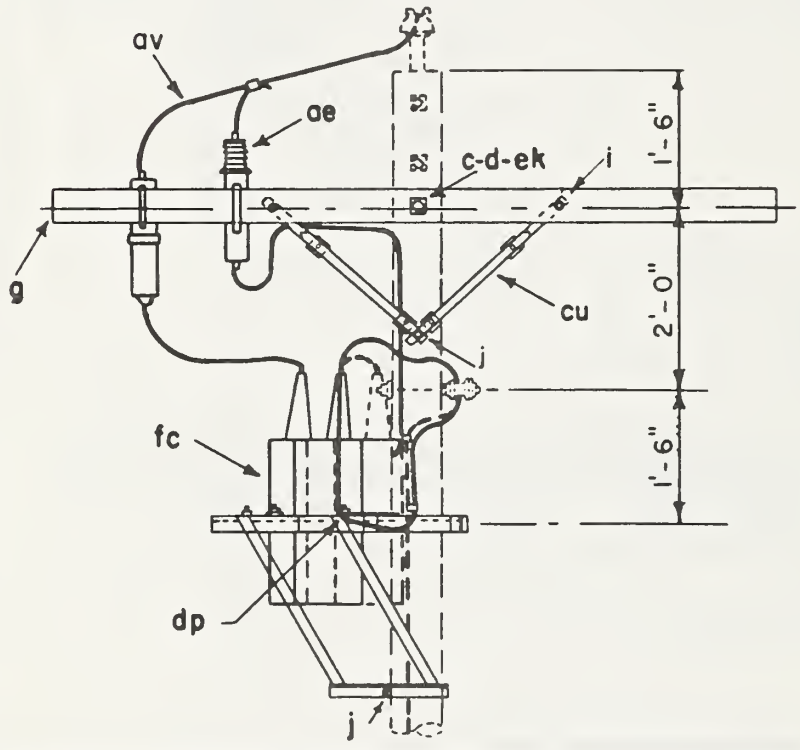
Apr., 1983

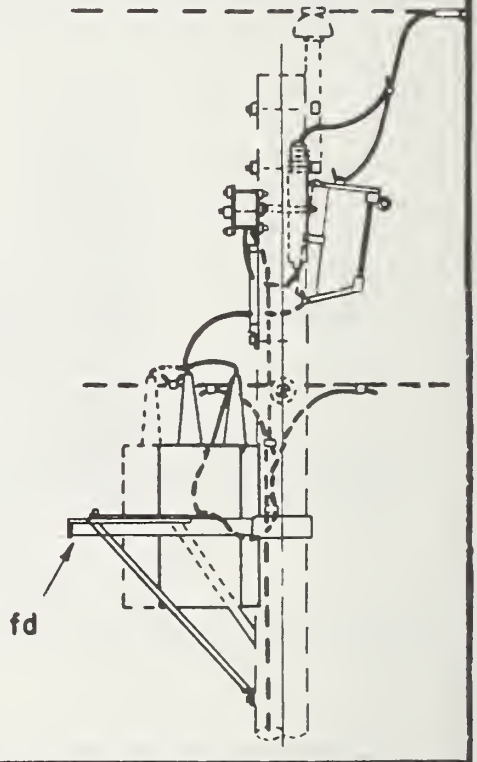
M8-15



NOTES:

1. Specify number and kVAr required.
2. Load Break cutouts for installations over 75 kVAr.
3. Specify insulating caps for primary terminal bushings.





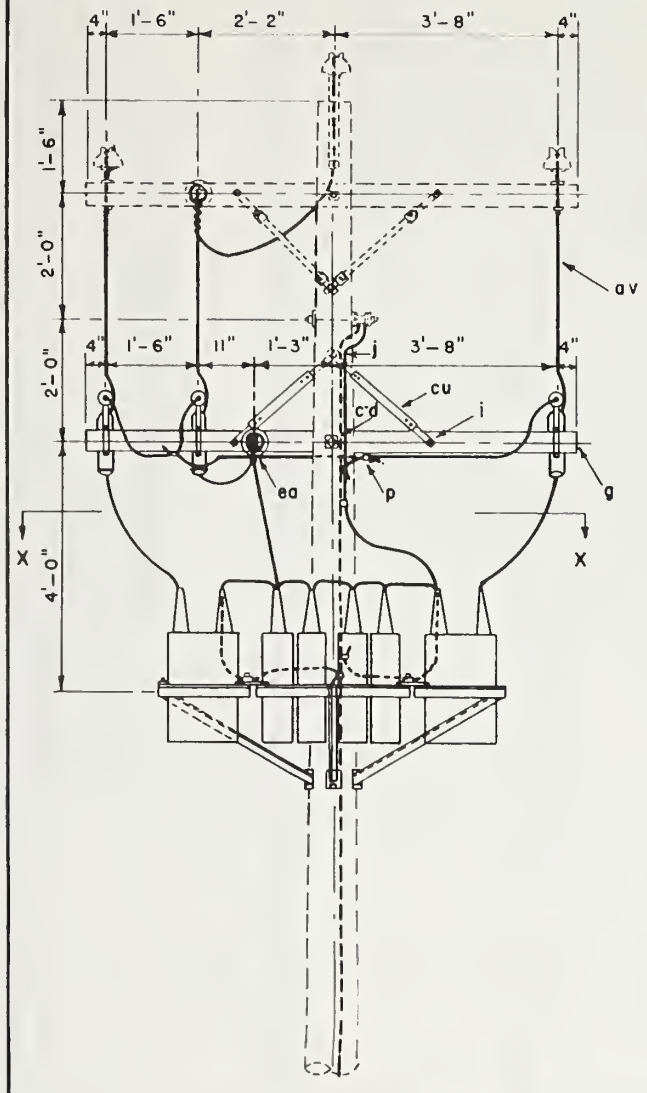
ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c	1	Bolt, machine, 5/8" x req'd. length	p	1	Connector, compression type
d	2	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole	p		Connectors, as required
g	1	Crossarm, 3 1/2" x 4 1/2" x 8'-0"	ae	1	Surge arrester
cu	2	Brace, wood, 28"	af	1	Cutout, fuse
i	2	Bolt, carriage, 3/8" x 4 1/2"	av		Jumpers or Leads as required
j	1	Screw, lag, 1/2" x 4"	dp	1	Clamp, ground wire
fc		Capacitor, _____ kVA each	fd	1	Capacitor Hanger, pole mounted
ek		Locknuts			

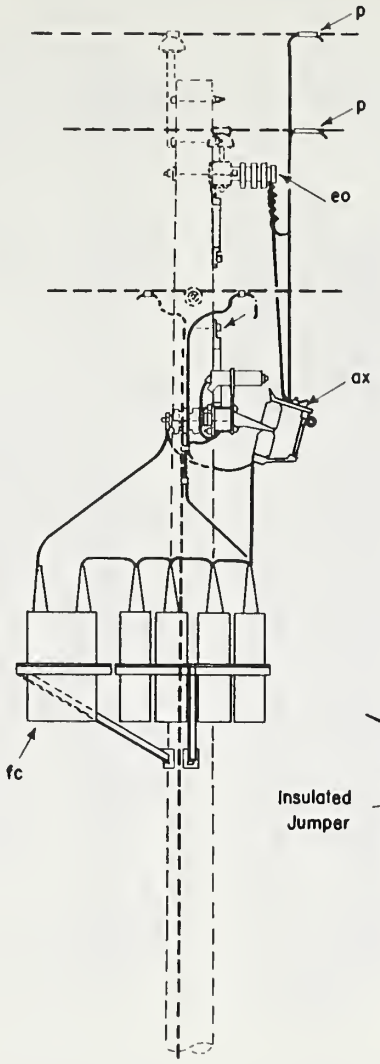
12.5/7.2 kV

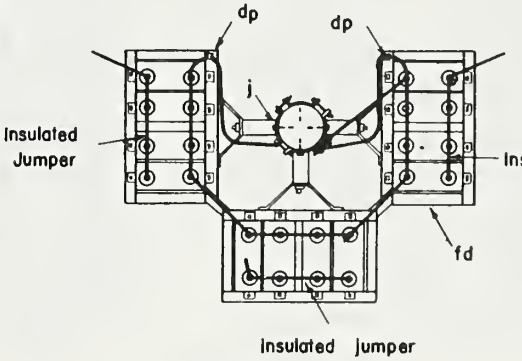
SINGLE PHASE CAPACITOR ASSEMBLY

Apr., 1983

M9-11







SECTION X-X

ITEM	NO.	MATERIAL
c	1	Bolt, machine, 5/8" x req'd. length
d	2	Washer, 2 1/4" x 2 1/4" x 3/16", 13/16" hole
g	1	Crossarm, 3 5/8" x 4 5/8" x 8'-0"
i	2	Bolt, carriage, 3/8" x 4 1/2"
j	4	Screw, lag, 1/2" x 4"
p	3	Connector, compression type
p		Connector, as required
ov		Jumpers, stranded, as required
* ax	3	Cutout and arrester combination
cu	2	Brace, wood, 28"
dp	2	Clamp, ground wire
eo	2	Insulator, post type, with 7" stud
fc		Capacitor _____ kVAr each
fd	1	Hanger, cluster type
ek		Locknuts, as required

Notes:

1. Specify number and kVAr required.
2. * Load Break cutouts for installations over 75 kVAr /phase.
3. For V-Phase installations omit capacitors and related items on center phase. Designate as assembly M9-2.
4. Specify insulating caps for primary terminal bushings.

SUGGESTED FUSING TABLE

kVAr Connected to each Cutout	25	50	75	100	150
Fuse Size (Amp.)	7	15	25	25	40

Note: Care must be taken to coordinate fuse with sectionolizing plan.

12.5/7.2 kV

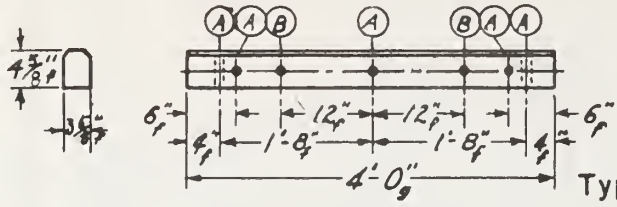
TWO OR THREE PHASE CAPACITOR ASSEMBLY

Apr., 1983

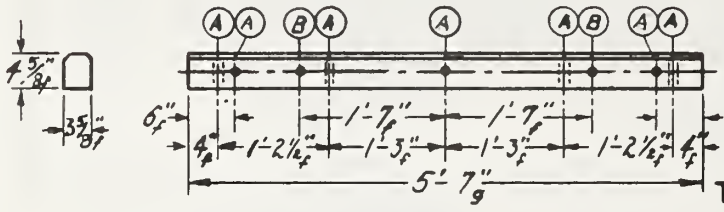
M9-12, M9-13

TOLERANCES SIZES OF HOLES

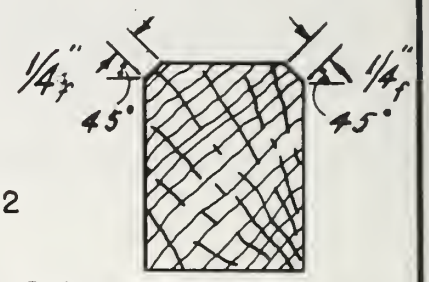
	Nominal	Go	No Go
(A)	1 1/16"	5/8"	3/4"
(B)	9/16"	3/8"	1/2"
(C)	9/16"	1/2"	5/8"



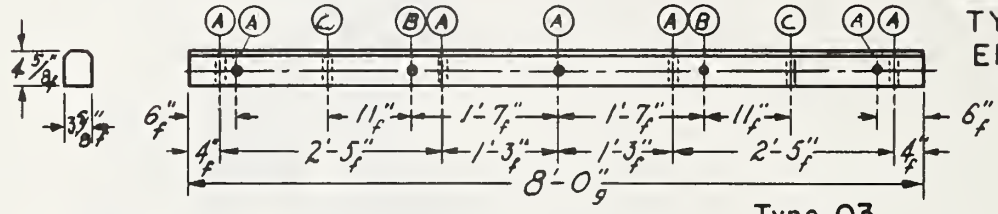
Type 01



Type 02

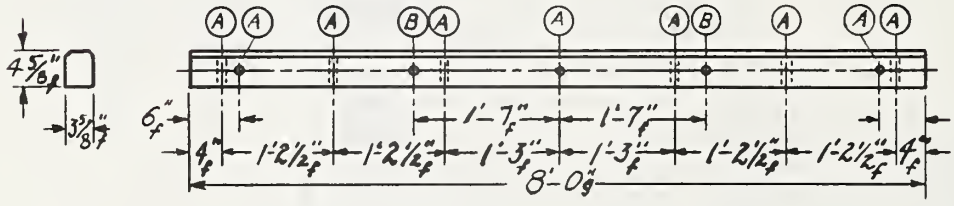


TYPICAL ENLARGED SECTION

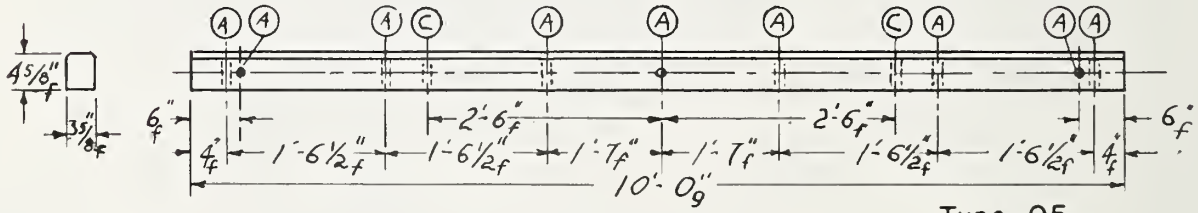


Type 03

f --- ± 1/8"
g --- ± 1/4"



Type 04

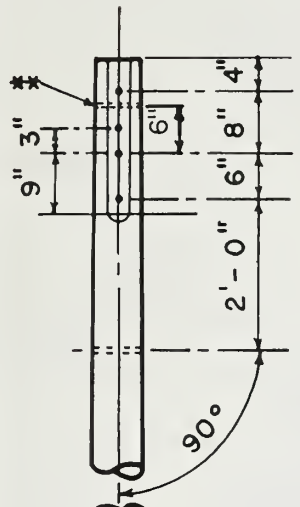


Type 05

CROSSARM DRILLING GUIDE

Apr., 1983

M19



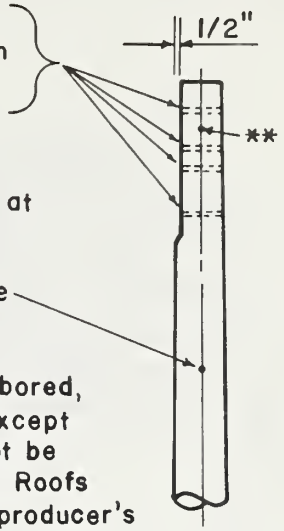
Through-bolt holes must be parallel and in the same plane.

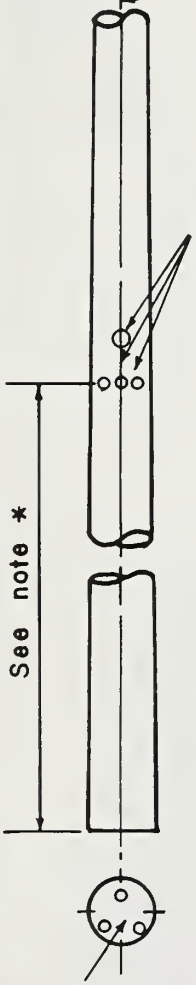
HOLES: Drill 11/16" diameter.

GAINS: Gains are to be flat with plane at right angles to bolt hole.

Neutral bolt hole must be at 90° angle with through-bolt holes.

All poles shorter than 50 feet must be bored, roofed and gained before treatment, except that Class 7 and smaller poles need not be gained unless requested by purchaser. Roofs may be flat or at a 15° angle at the producer's option.





*Bottom of brand or center of metal disk shall be 10'± 1" from pole butt; 14'± 1" mark for poles 55' and longer.

If insured warranted pole, Brand "1W".

Manufacturer's Mark and Date of Treatment, (Month and Year).

Brand with proper length and class.

Brand with species, preservative code and retention.

Tolerance:

Holes

On the gain ± 1/8" from the centerlines of the holes.

On the side opposite the gain ± 1/4" from the centerlines of the holes.

Location – measured from roof
Gain side ± 1/4"
Opposite side ± 1/2"

Diameter ± 1/16"
Gains out of parallel ± 1/2"

** Optional, anti-split bolt hole to be drilled only when so specified by the purchaser.

Brand butt with proper length and class

POLE FRAMING GUIDE

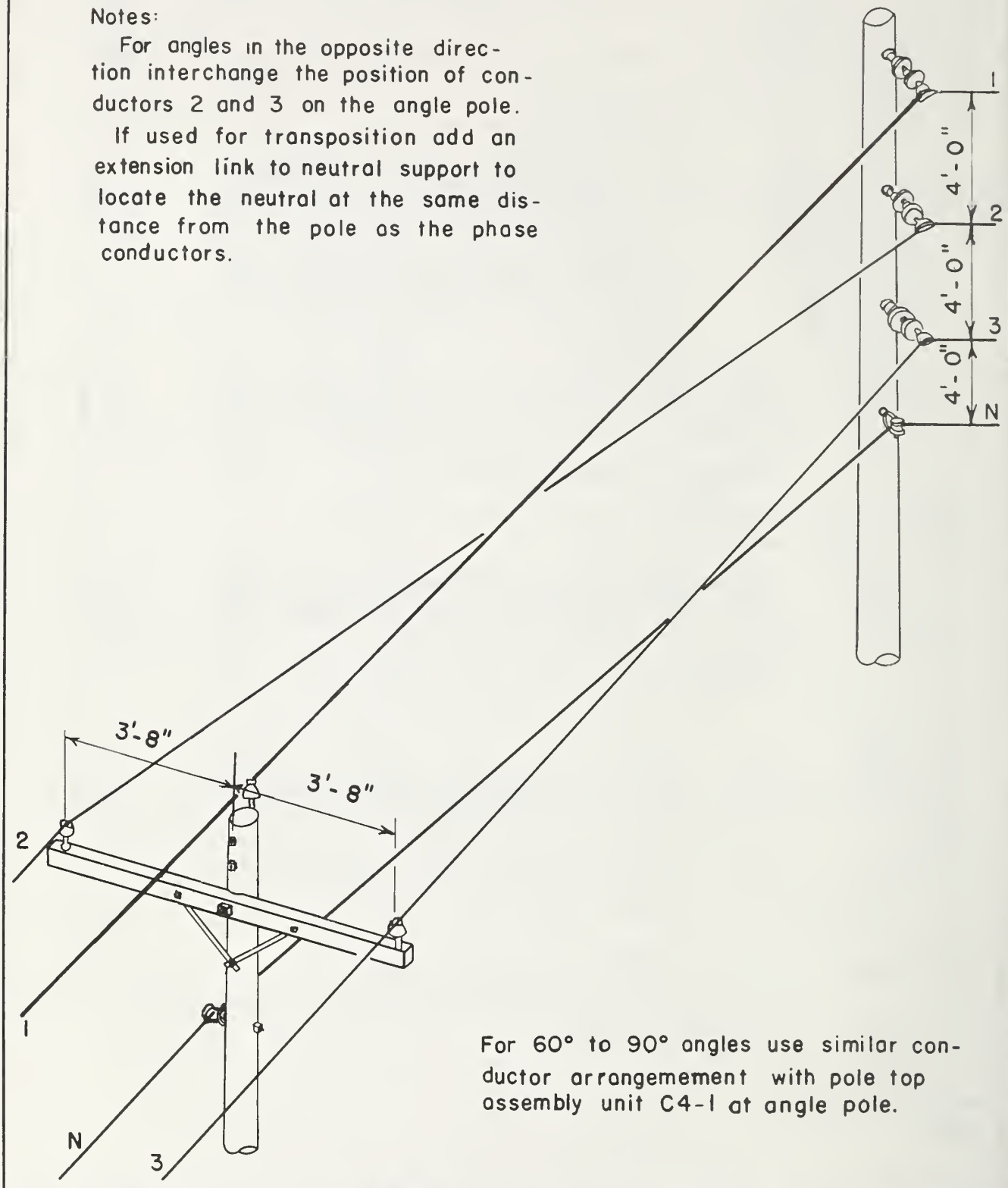
Apr., 1983

M20

Notes:

For angles in the opposite direction interchange the position of conductors 2 and 3 on the angle pole.

If used for transposition add an extension link to neutral support to locate the neutral at the same distance from the pole as the phase conductors.



For 60° to 90° angles use similar conductor arrangemement with pole top assembly unit C4-1 at angle pole.

ANGLE CONSTRUCTION GUIDE
CROSSARM TO VERTICAL CONST.- 30° TO 60° ANGLE

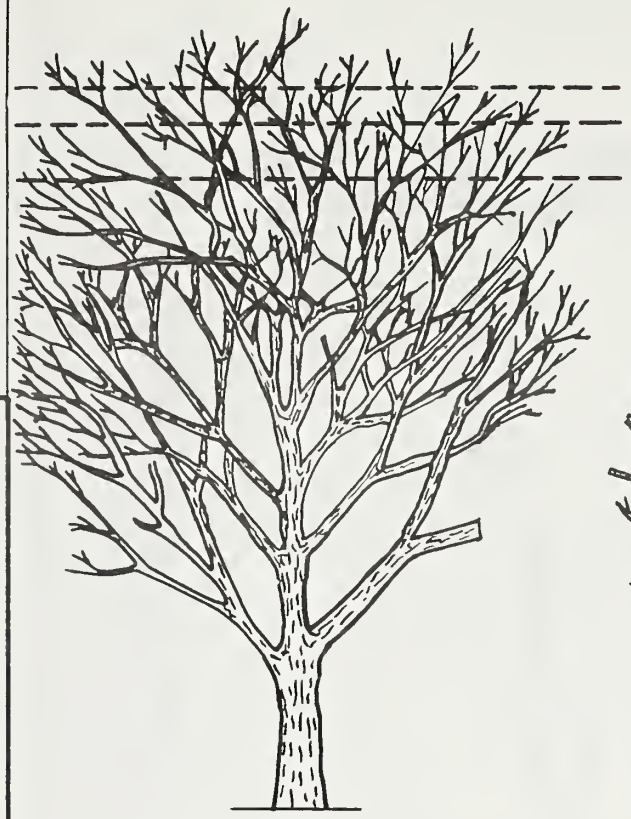
Apr., 1983

M21

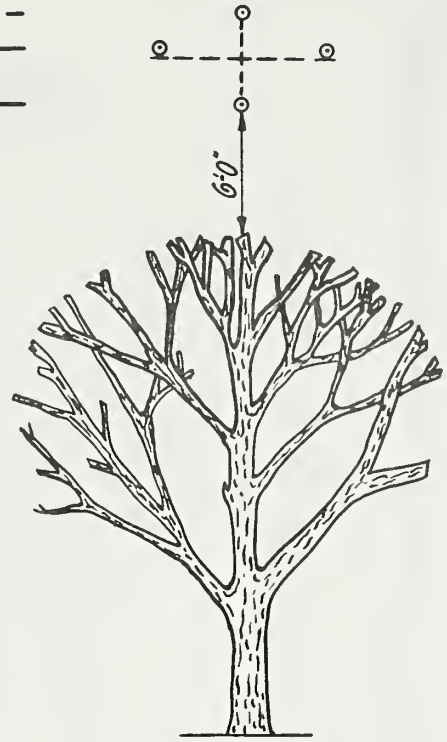
TREE TRIMMING GUIDE

Apr., 1983

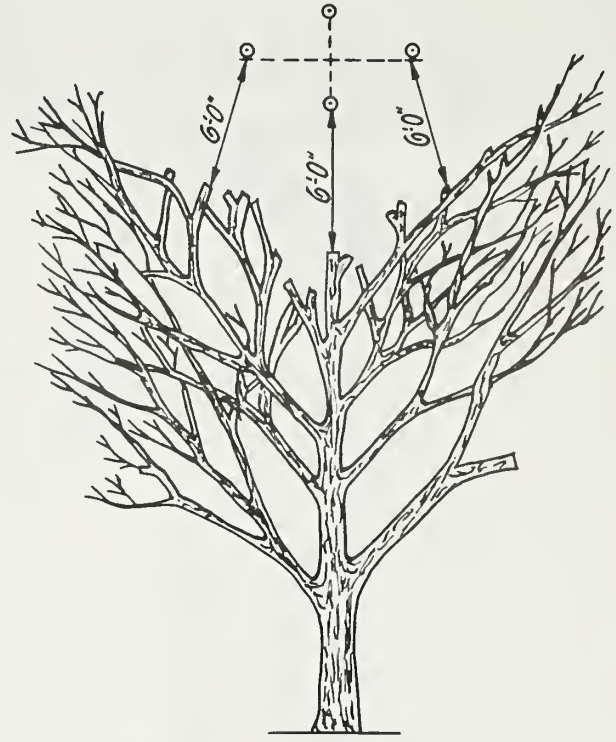
M22-1



Before Trimming



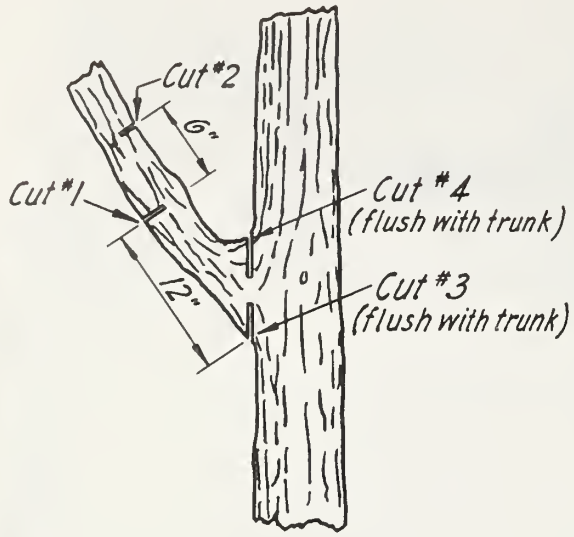
Right Way



Wrong Way

Note:

No parts of tree should be closer than 6'-0" from open wiring.
Trimming should leave tree with symmetrical appearonce.

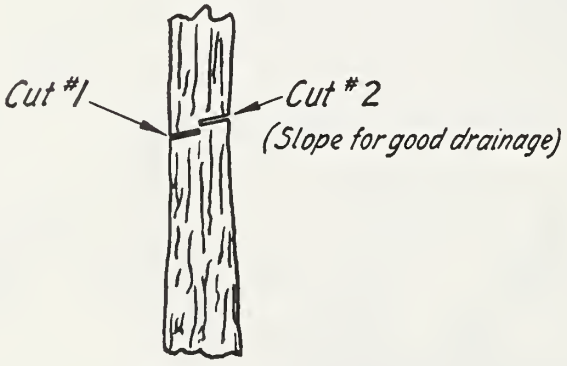


Right Way

Wrong Way

For small branches
omit Cuts #1 and #2

REMOVAL OF HEAVY SIDE LIMB



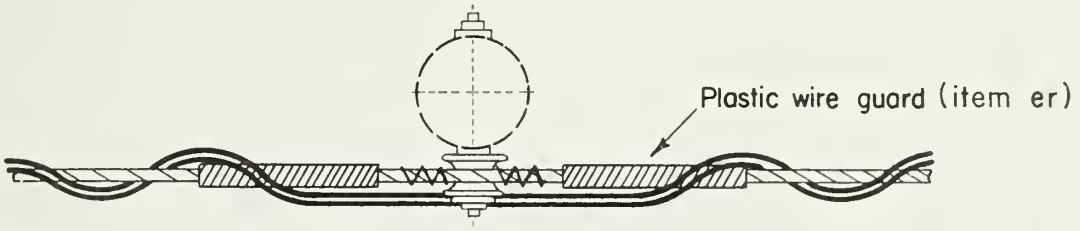
Right Way

Wrong Way

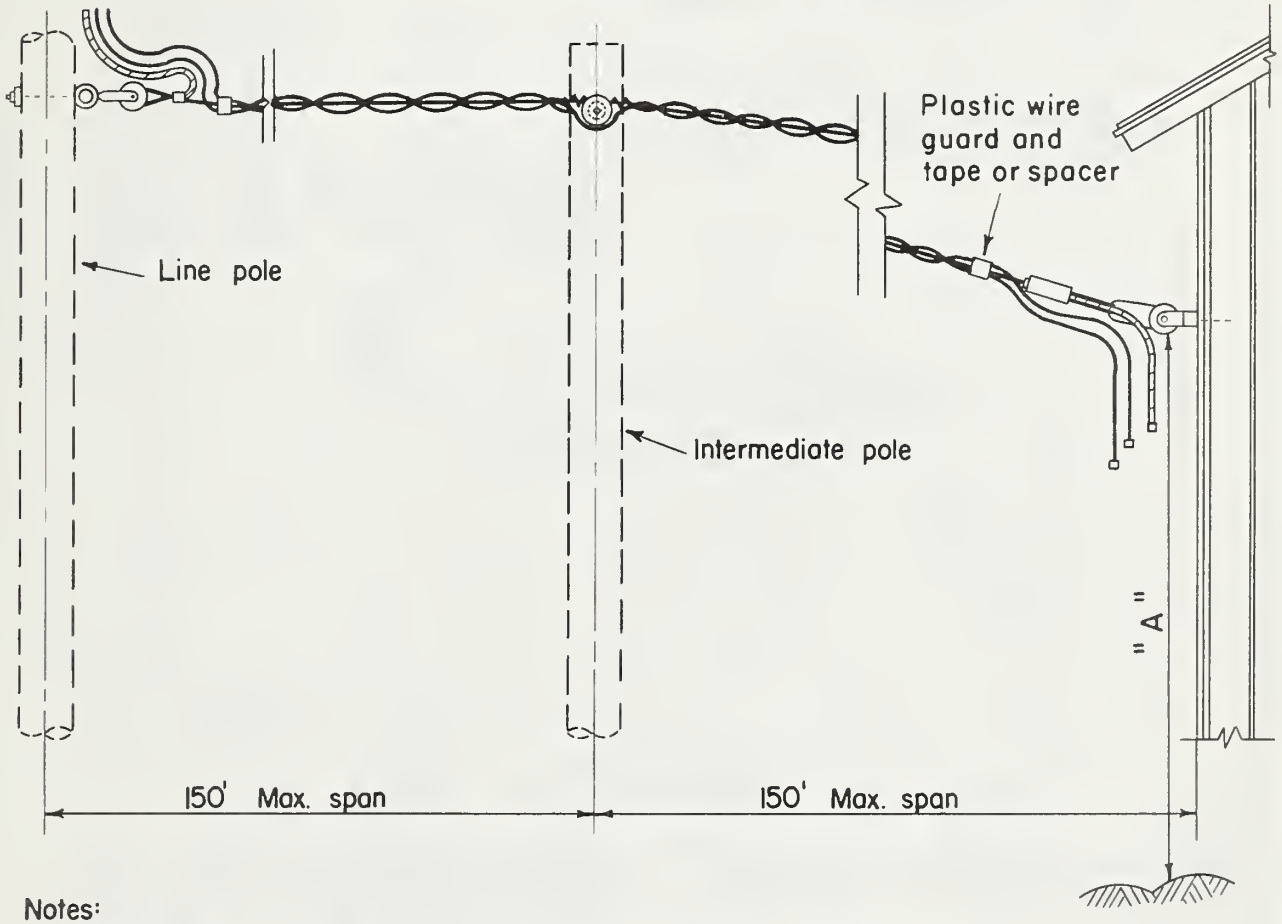
REMOVAL OF VERTICAL LIMB

NOTE: Coat final cut with tree paint.

	TREE TRIMMING GUIDE	
	Apr., 1983	M22-2



PLAN



Notes:

1. Services as short as possible are preferred.
2. Refer to secondary and service assemblies for construction details.
3. Service connectors to be insulated compression type.

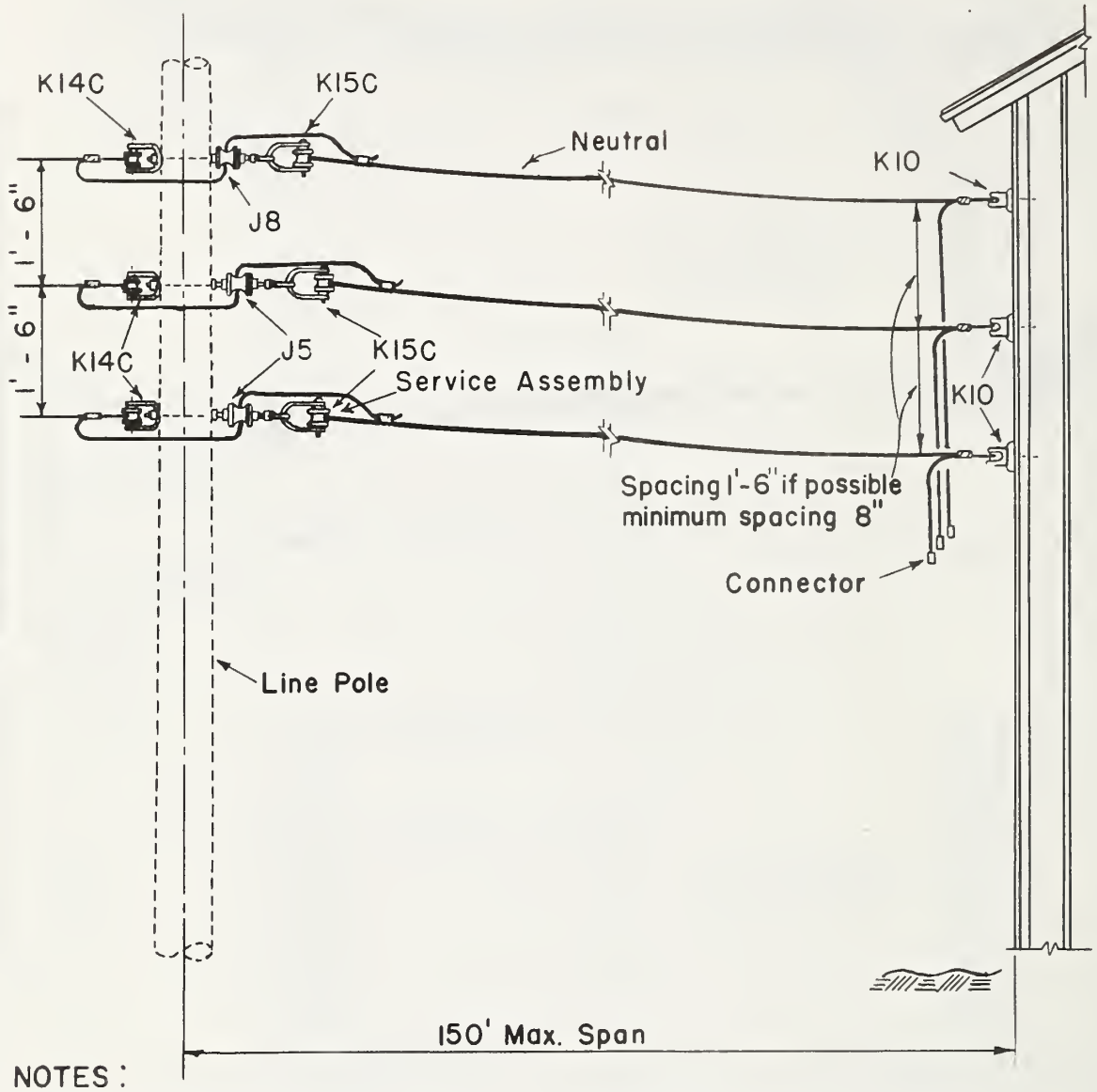
Clearance "A" minimum

To bottom of drip loop	10'
To service assembly and service drop conductor in span	12'

CABLE SERVICE ASSEMBLY GUIDE

Apr., 1983

M24



NOTES:

Service connectors to be insulated compression type.

Clearance from final grade to bottom of drip loop, to service assembly, and to service drop conductor in span shall be 12' minimum.

Insulation on covered conductor that is under strain should not be cut.

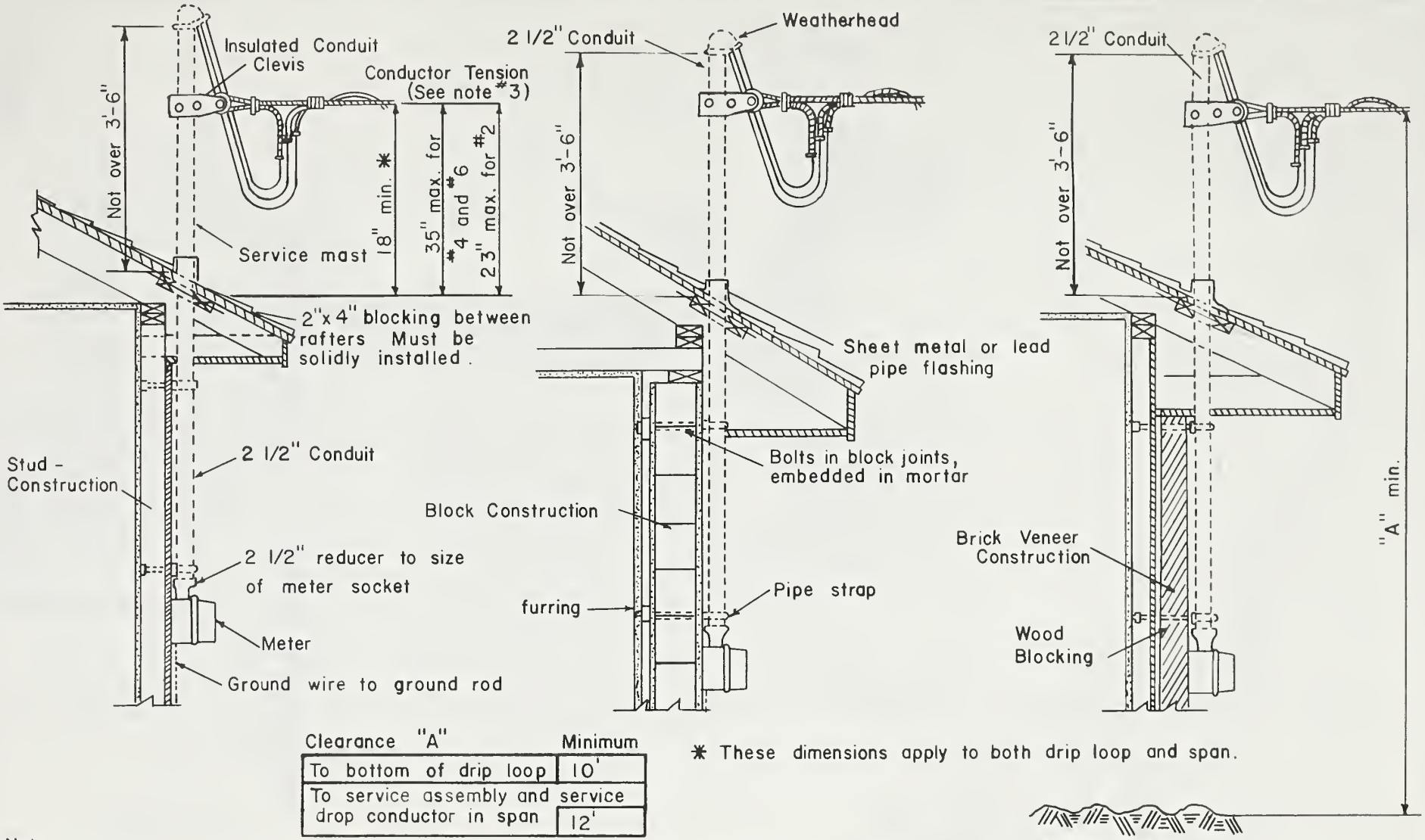
In brick or concrete walls use 3/8" expansion bolts or shields in 5/8" holes at least 2½" deep, or wedge expanded eyebolts.

OPEN WIRE

SECONDARY OR SERVICE ASSEMBLY GUIDE

Apr., 1983

M24-1



Clearance "A"	Minimum
To bottom of drip loop	10'
To service assembly and service drop conductor in span	12'

* These dimensions apply to both drip loop and span.

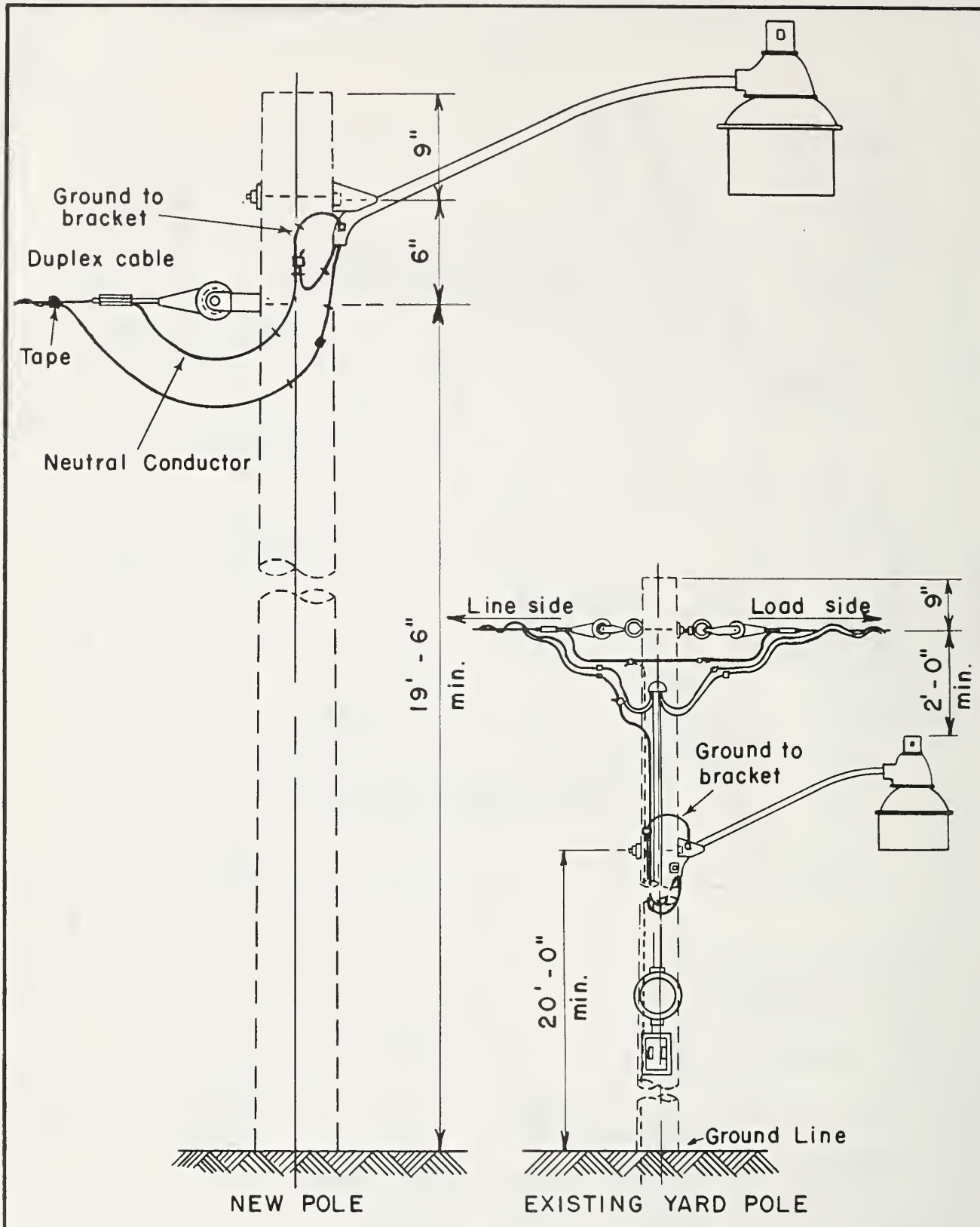
Notes :

1. If length of conduit exceeds ten feet, coupling will be permitted on end adjacent to meter.
2. Meter to be located 5'-6" from ground level.
3. Maximum tension of conductor not to exceed 50% of ultimate strength.
4. For service assemblies see drawings K16C, K17, K17L.
5. Service connectors to be insulated compression type.

ASSEMBLY GUIDE OF SERVICE MAST FOR RANCH TYPE HOUSE

Apr., 1983

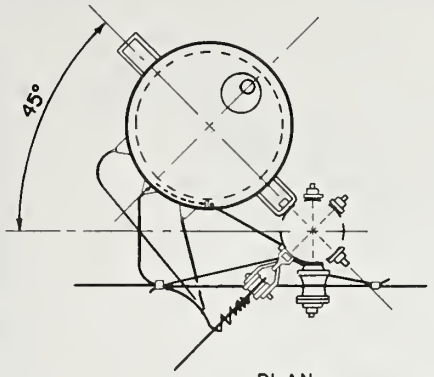
M24-10



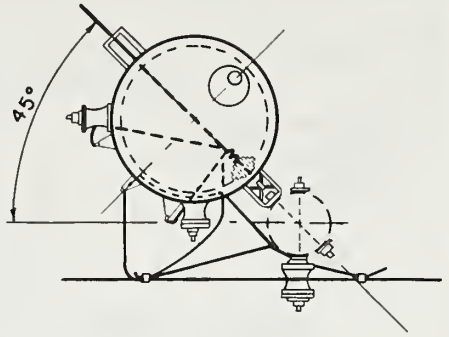
SECURITY LIGHT INSTALLATION GUIDE
(UNMETERED)

Apr., 1983

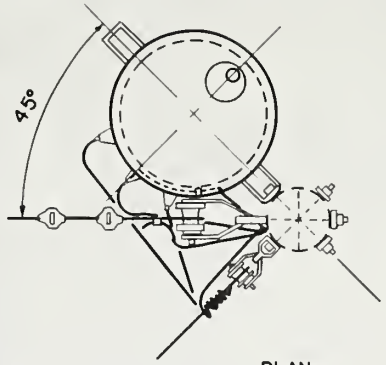
M26-5



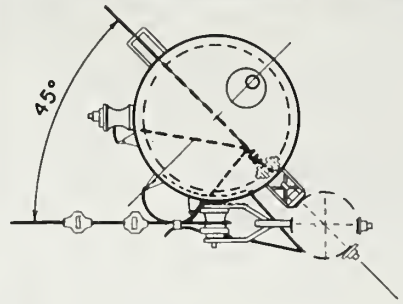
PLAN



PLAN

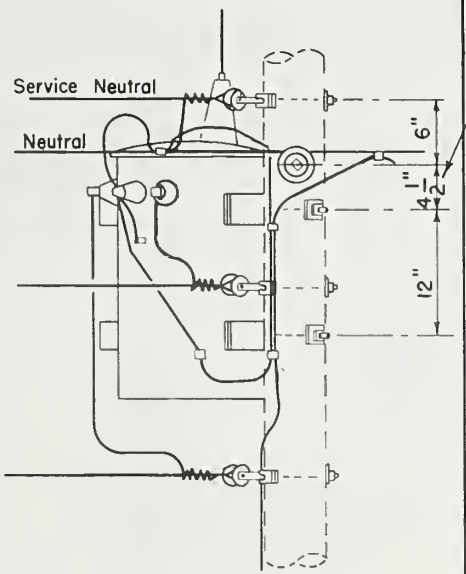


PLAN

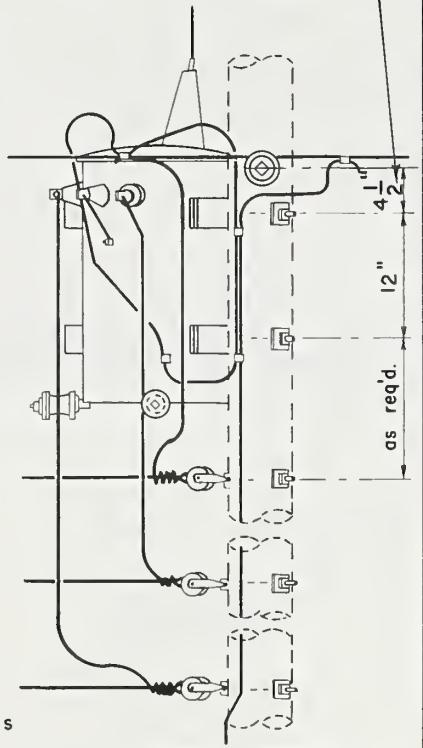


PLAN

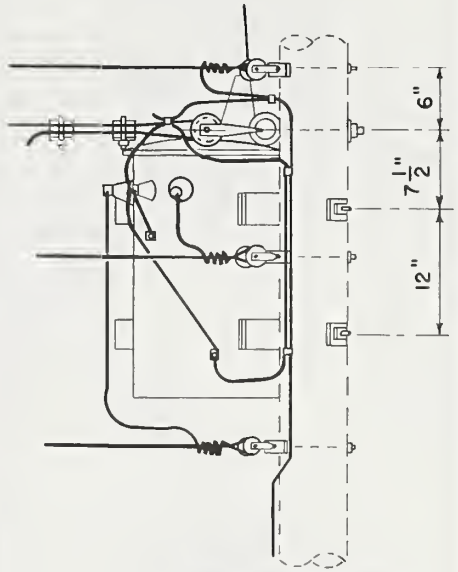
For multiphase primary line construction with the crossarm in the revised lower position, change this dimension to 12 inches.



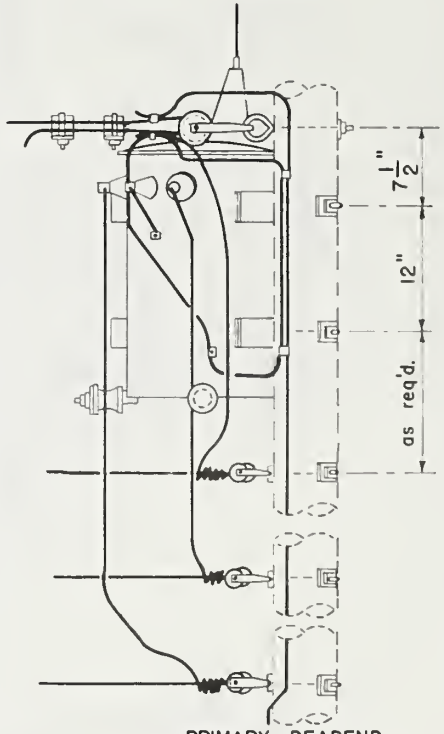
PRIMARY TANGENT
SERVICE TAKE-OFF AT
TRANSFORMER LEVEL



PRIMARY TANGENT
SERVICE TAKE-OFF BELOW
TRANSFORMER



PRIMARY DEADEND
SERVICE TAKE-OFF AT
TRANSFORMER LEVEL



PRIMARY DEADEND
SERVICE TAKE-OFF BELOW TRANSFORMER

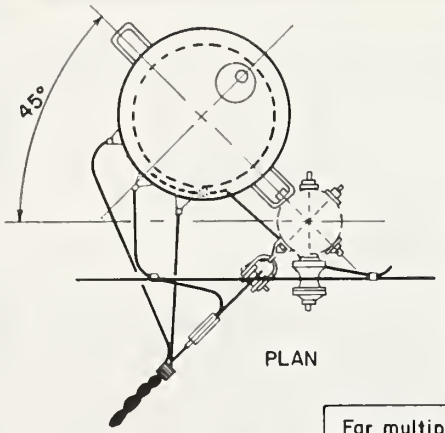
Note:

Transformers may be mounted in alternate positions and quadrants as practical in order to facilitate services in directions not shown.

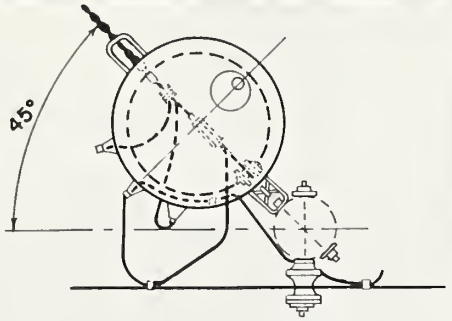
TRANSFORMER CONNECTION GUIDE
OPEN WIRE SERVICES

Apr., 1983

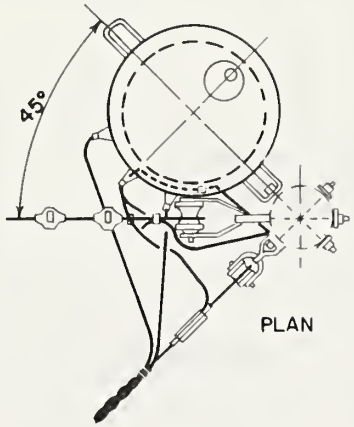
M27



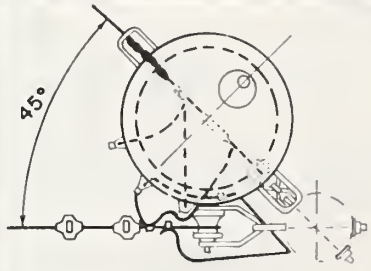
PLAN



PLAN

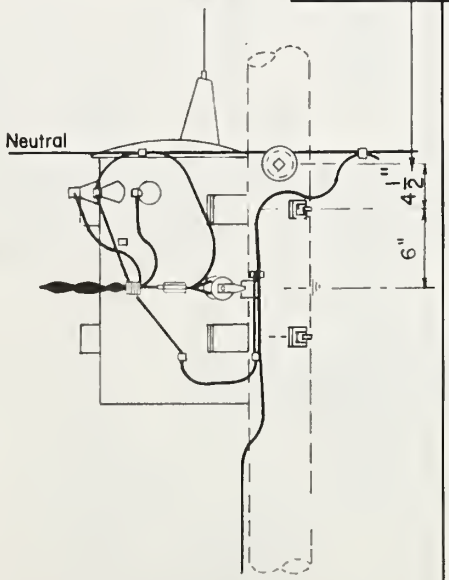


PLAN

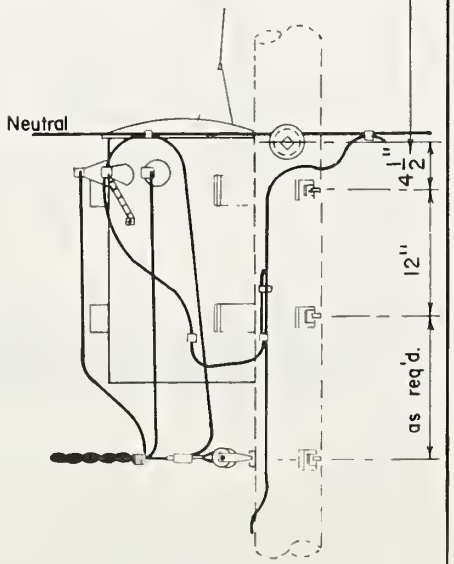


PLAN

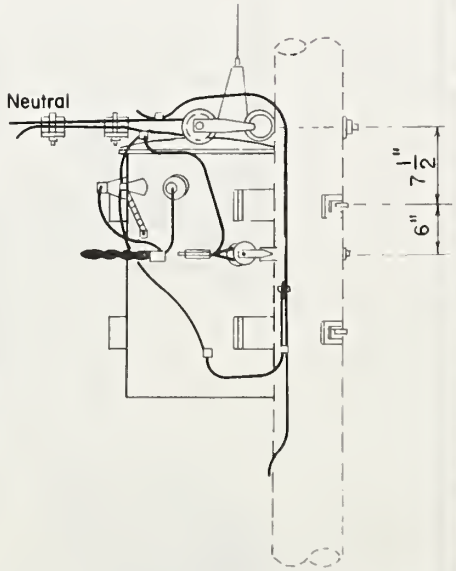
Far multiphose primory line construction with the crossorm in the revised lower position, increase this dimension to 12"



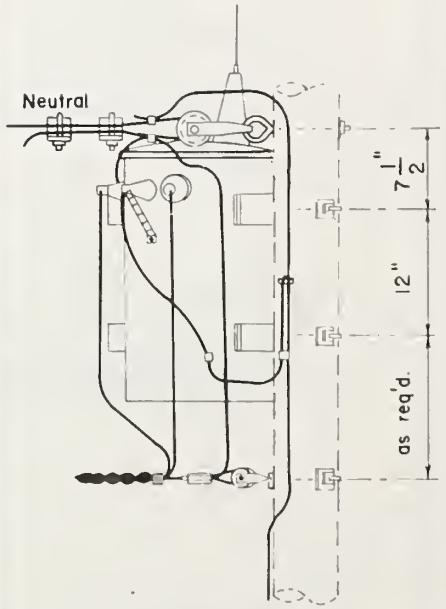
PRIMARY TANGENT
SERVICE TAKE-OFF AT
TRANSFORMER.



PRIMARY TANGENT
SERVICE TAKE-OFF
BELOW TRANSFORMER.



PRIMARY DEADEND
SERVICE TAKE-OFF AT
TRANSFORMER.



PRIMARY DEADEND
SERVICE TAKE-OFF BELOW
TRANSFORMER.

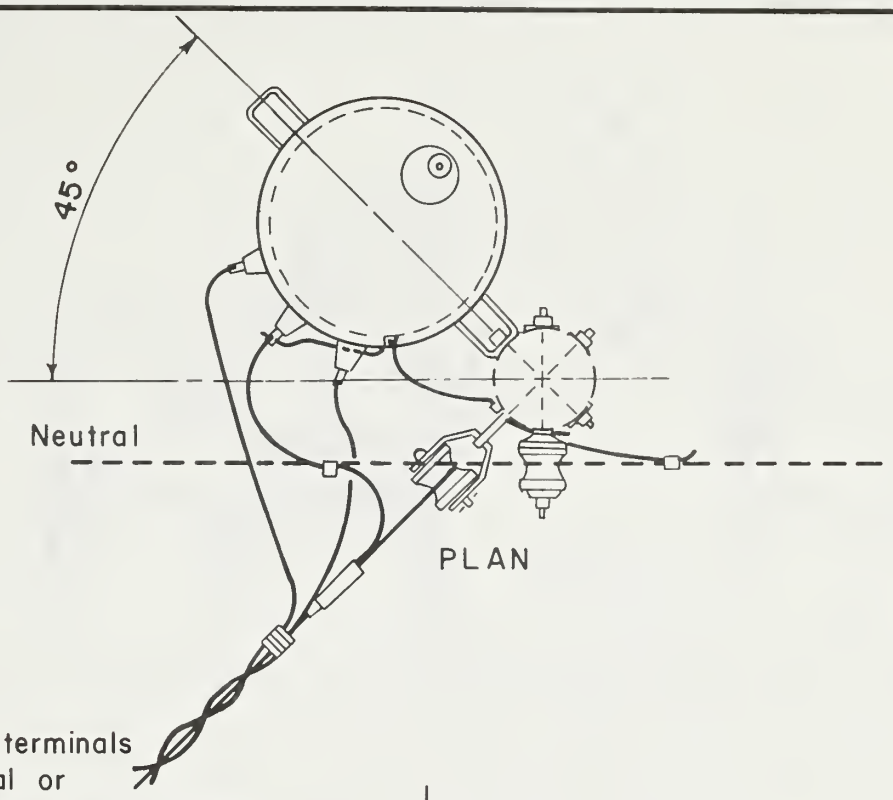
NOTES:

1. Secondary bushing not to be used for bi-metal connection.
2. Transformers may be mounted in alternative positions and quadronts as practicol in order to facilitate services in directions not shown.
3. For mare detail see Guide Drawing M27-1A.

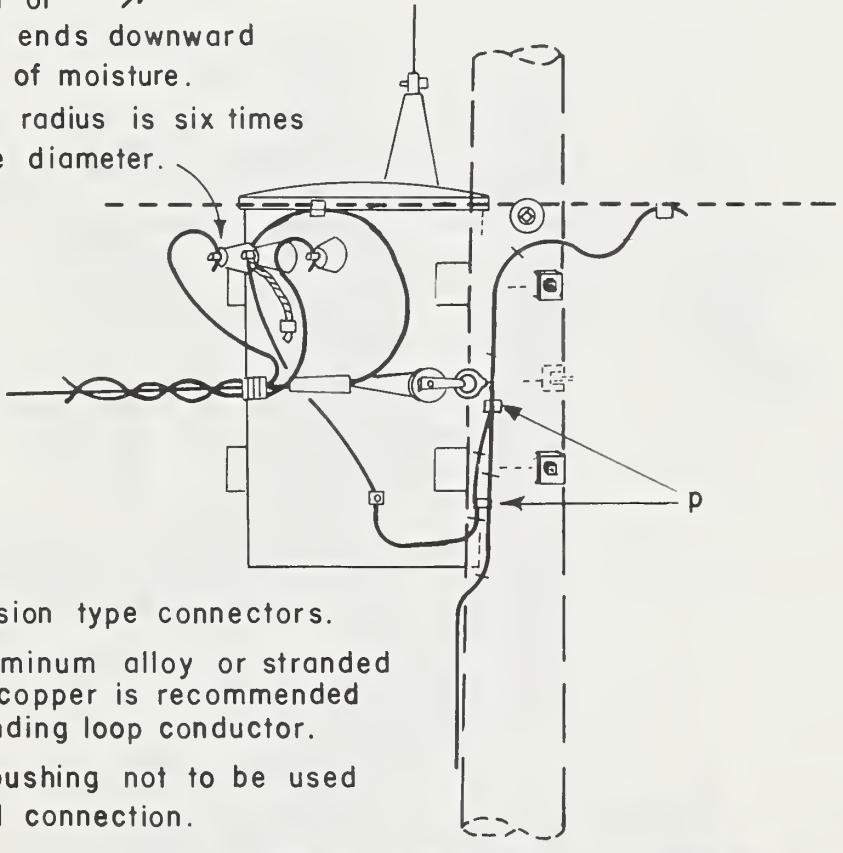
TRANSFORMER CONNECTION GUIDE
TRIPLEX CABLE SERVICES

Apr., 1983

M27-1



Cover secondary terminals with moisture seal or dress conductor ends downward to prevent entry of moisture.
Minimum bending radius is six times the overall cable diameter.



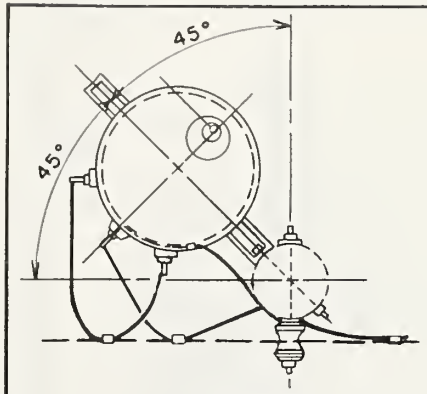
NOTES:

1. Use compression type connectors.
2. Stranded aluminum alloy or stranded soft-drawn copper is recommended for the grounding loop conductor.
3. Secondary bushing not to be used for bi-metal connection.

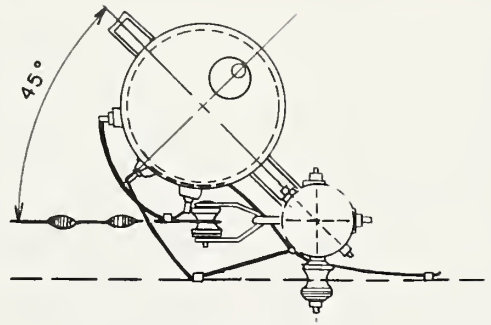
DETAIL OF ALTERNATIVE TRANSFORMER CONNECTION
(PRIMARY TANGENT, SERVICE TAKE-OFF AT TRANSFORMER)

Apr., 1983

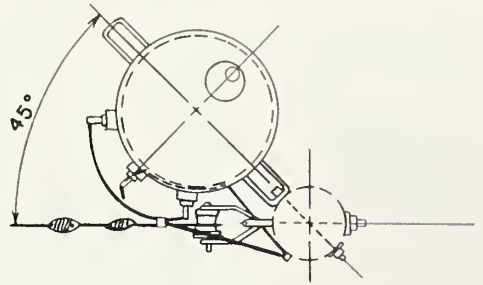
M27-1A



PLAN

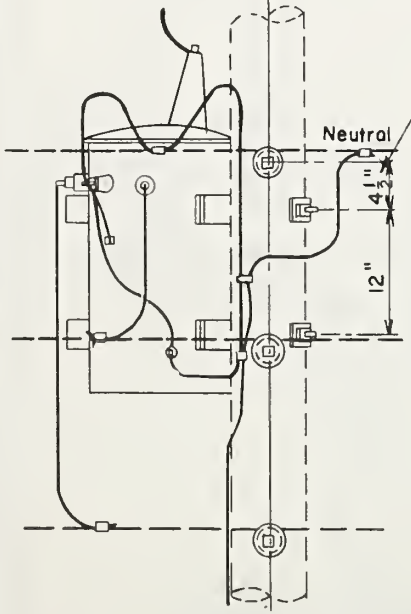


PLAN

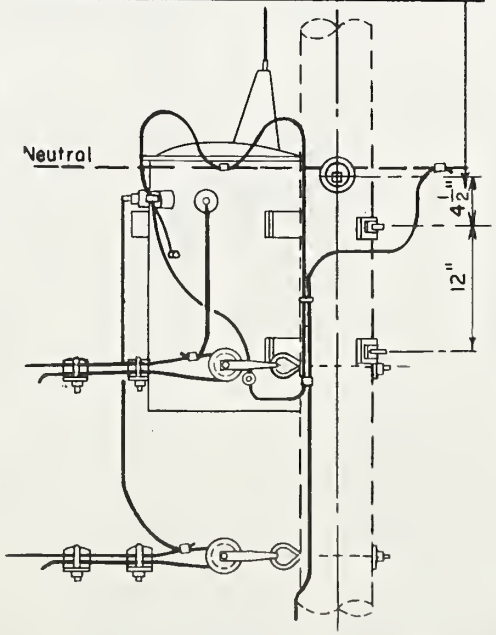


PLAN

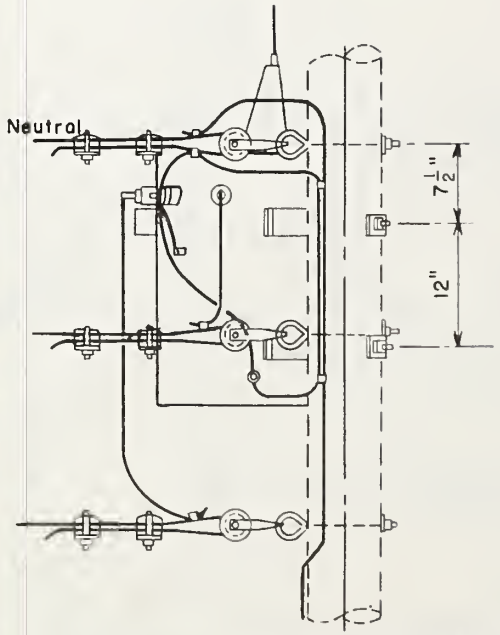
For multiphase primary line construction with the crossarm in the revised lower position, increase this dimension to 12 inches.



PRIMARY TANGENT
SECONDARY TANGENT



PRIMARY TANGENT
SECONDARY DEADEND

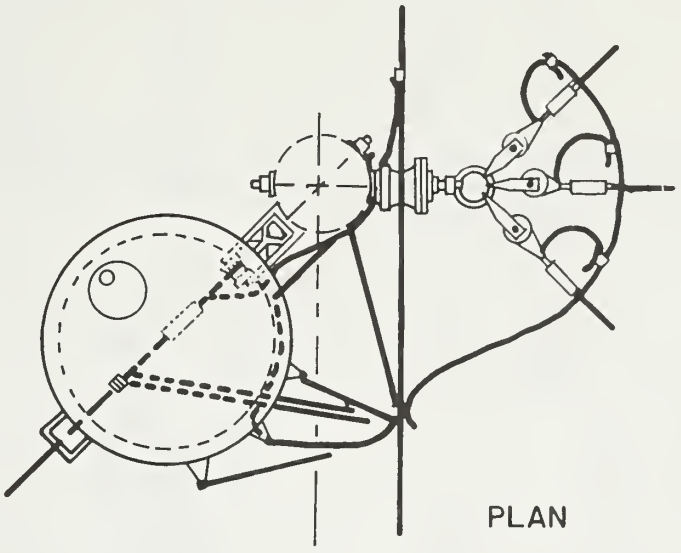


PRIMARY DEADEND
SECONDARY DEADEND

TRANSFORMER CONNECTION GUIDE
SECONDARY UNDERBUILD

Apr., 1983

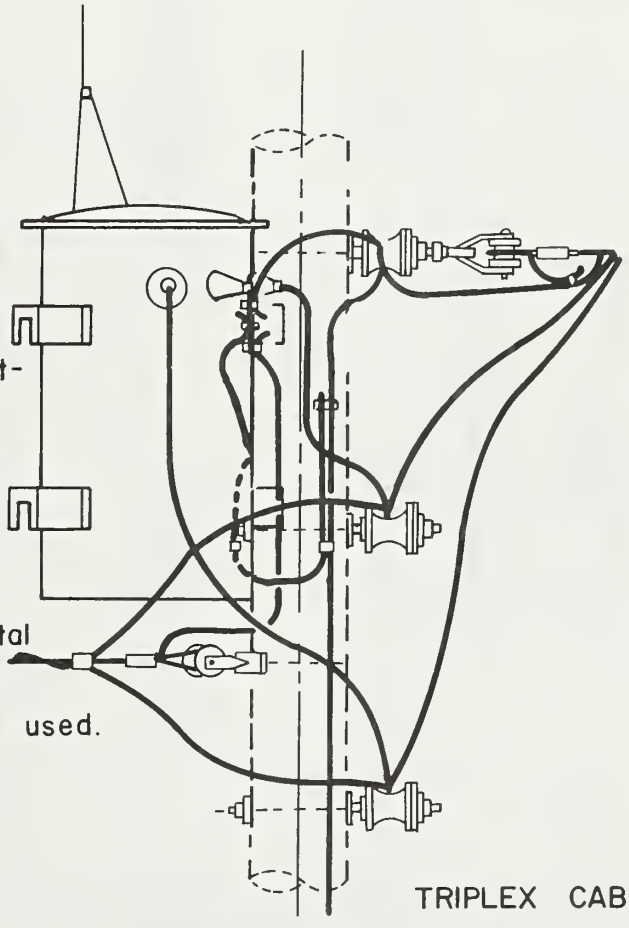
M27-2



PLAN

NOTES:

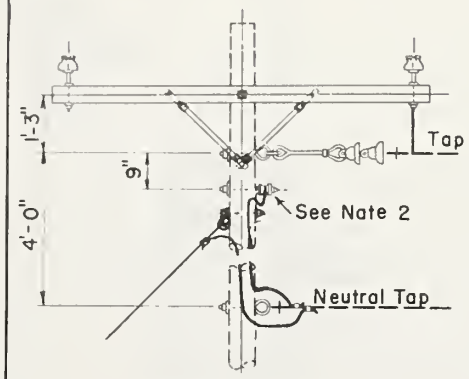
1. Use compression type connectors.
2. Stranded aluminum alloy or stranded soft-drawn copper is recommended for the grounding loop conductor.
3. Secondary bushing not to be used for bi-metal connection. Spades or copper studs may be used.



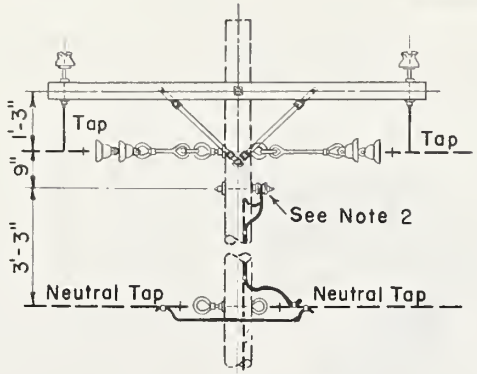
TRIPLEX CABLE

TRANSFORMER CONNECTION AND SERVICE TAKE-OFF GUIDE FROM SECONDARY

Apr., 1983		M28



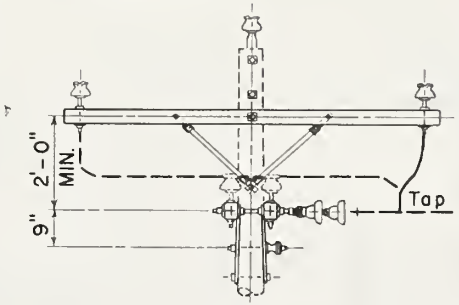
COMPLETE ASSEMBLY
A5-2 AND B1



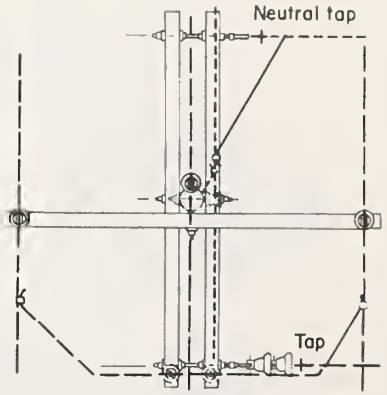
COMPLETE ASSEMBLY
A5-2, A5-2A and B1

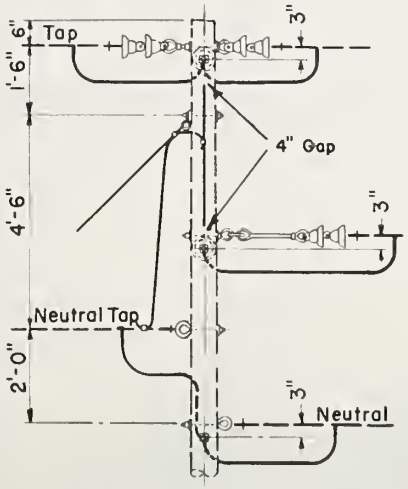
Notes:

1. Maintain 2" minimum spacing between ground wire and hardware associated with energized conductors.
2. Where ground clearance permits maunt all neutrals at lower level.

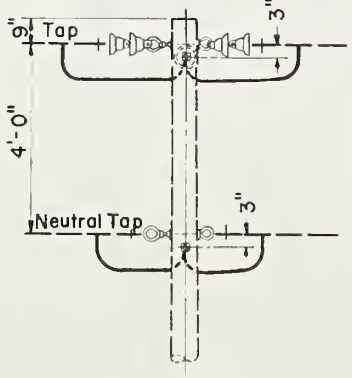


COMPLETE ASSEMBLY
C1, A7 and M5-5

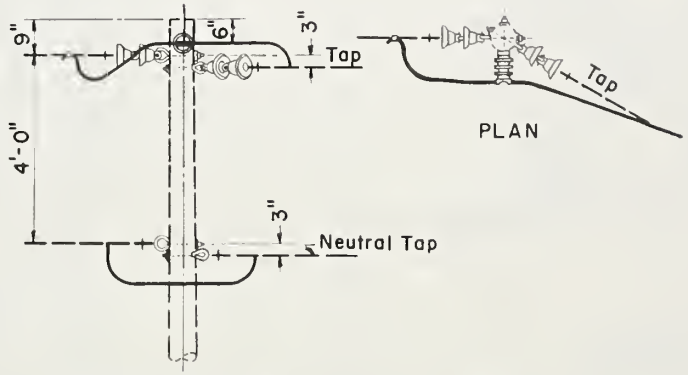




COMPLETE ASSEMBLY
A5-3 AND B4-1



COMPLETE ASSEMBLY
A5-3 AND A4

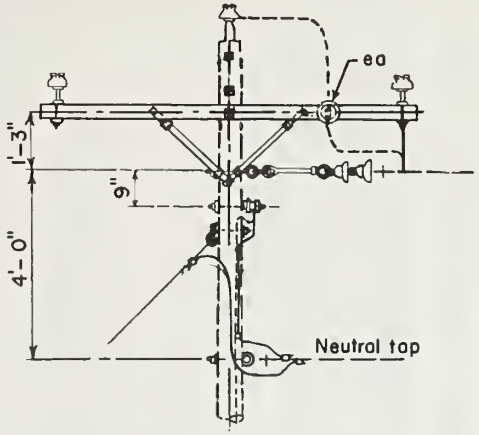


COMPLETE ASSEMBLY
A5-1, M5-7 and A5

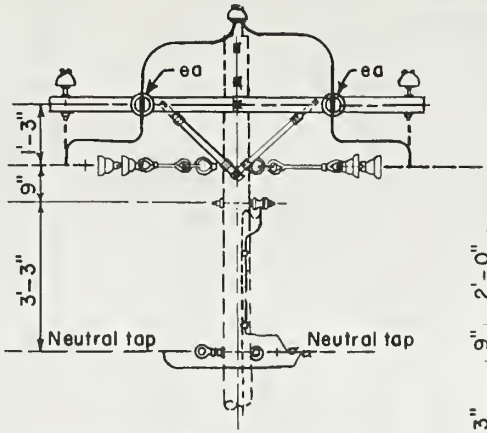
TAP ASSEMBLY GUIDE

Apr., 1983

M29-1

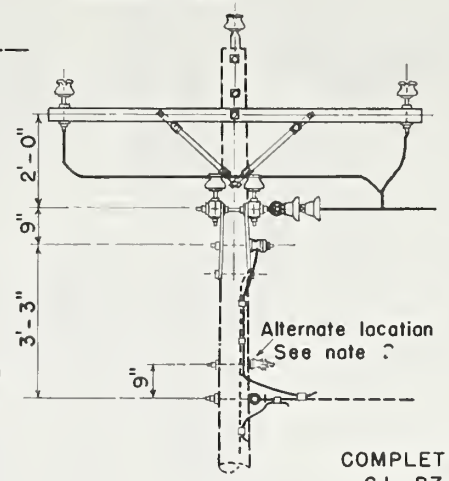


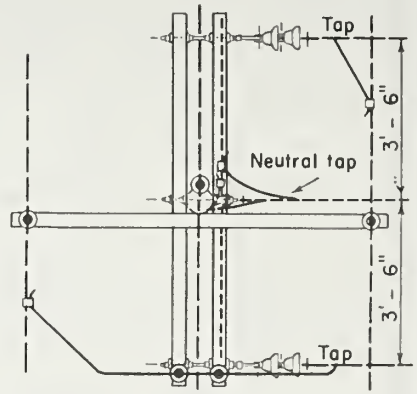
COMPLETE ASSEMBLY
A5-2, C1 AND M5-7 (If Needed)



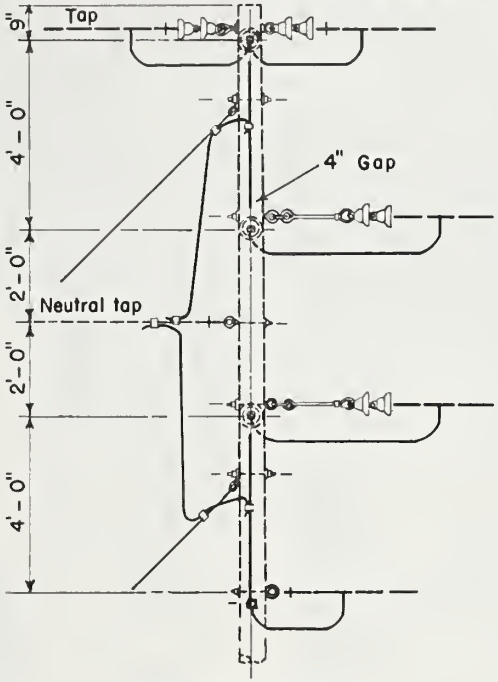
COMPLETE ASSEMBLY
A5-2, A5-2A, C1, AND M5-7 (If Needed)

Notes:
1. Maintain 2" minimum spacing between ground wire and hardware associated with energized conductors.
2. Where ground clearance permits mount all neutrals at lower level.

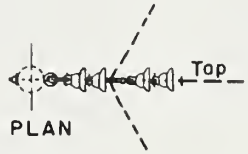




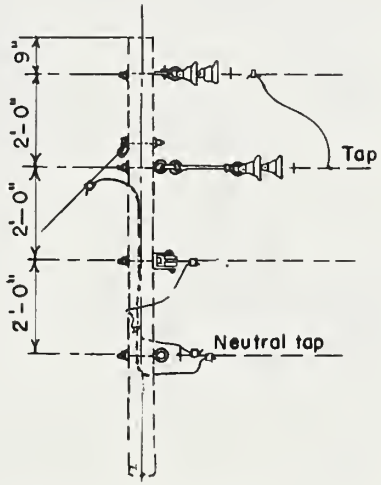
COMPLETE ASSEMBLY
C1, B7 and M5-5



COMPLETE ASSEMBLY
A5-3 AND C4-1

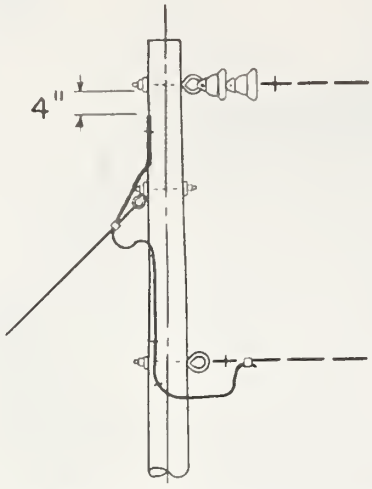


PLAN

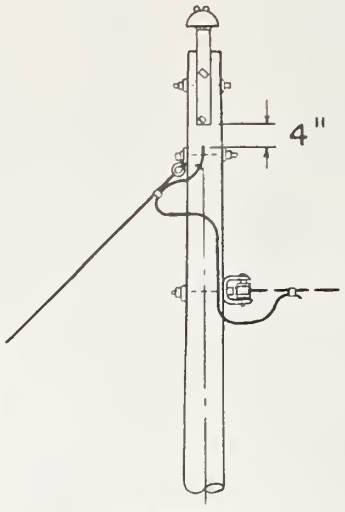


COMPLETE ASSEMBLY
A5-2 AND A3

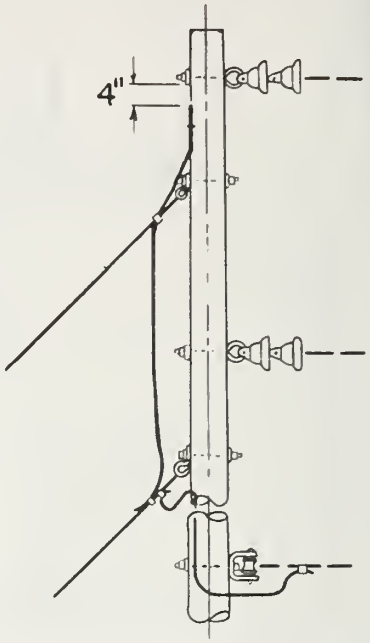
TAP ASSEMBLY GUIDE		
Apr., 1983		M29-2



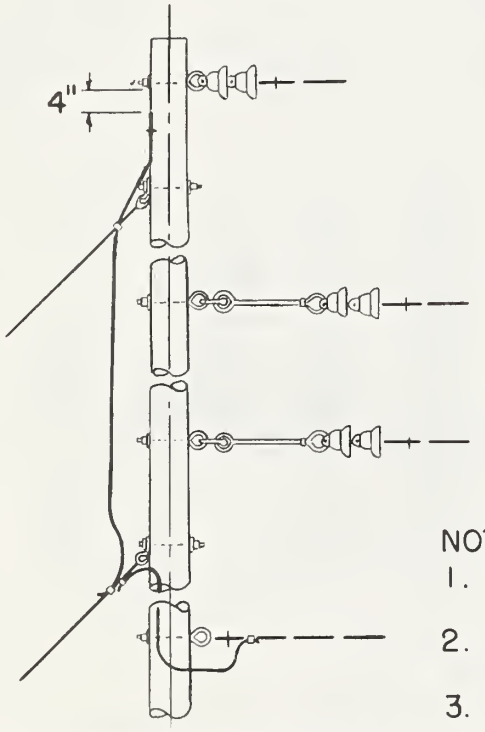
AT SINGLE PHASE ANGLES AND DEADENDS



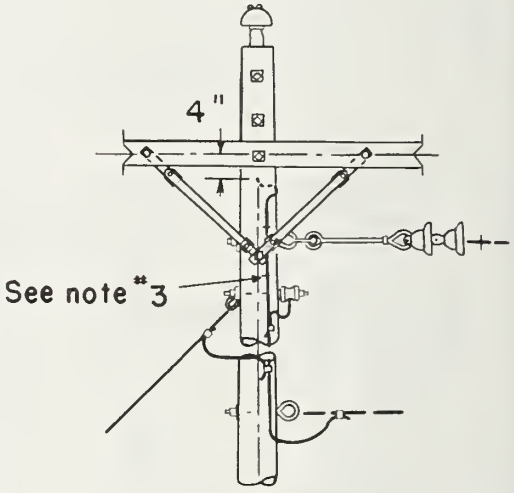
AT SINGLE PHASE ANGLES



AT V-PHASE ANGLES AND DEADENDS



AT THREE PHASE ANGLES AND DEADENDS



AT V OR THREE PHASE TAP ASSEMBLY

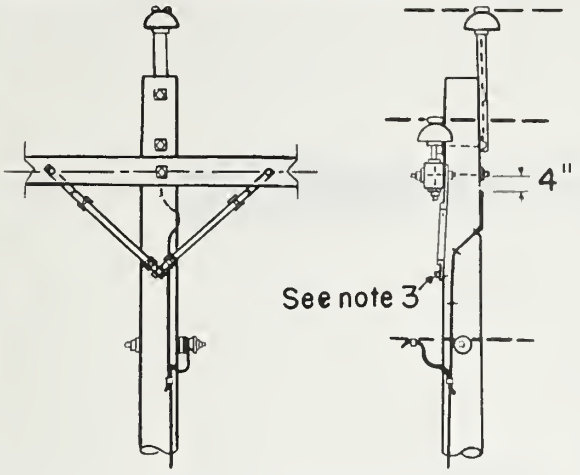
NOTES:

1. A solid conductor should be used for the pole top extension wire.
2. The jumper wire on system grounding assemblies should be stranded.
3. Position of staple is important. Maintain 4" min. distance from staple or clip to lag screw or eye bolt.
4. Maintain 2" min. spacing between ground wire and hardware associated with energized conductors.
5. An M2-12, 12A, 12A2 or M2-11 ground assembly may be added if desired.

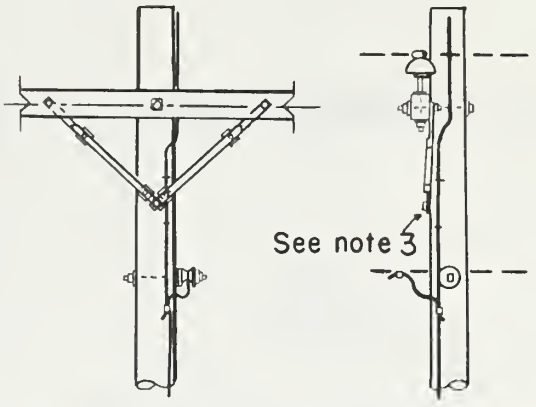
12.5 / 7.2 kV
GUIDE FOR INSTALLATION OF GROUND WIRE ABOVE NEUTRAL ON GUYED POLES

Apr., 1983

M30-1



AT SINGLE ARM ASSEMBLIES WITH POLE TOP PIN

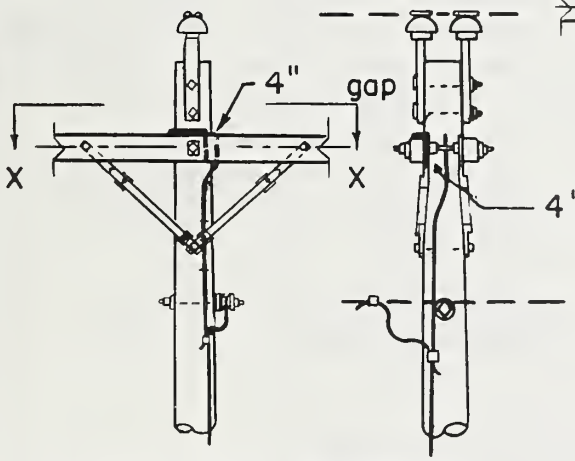


AT SINGLE ARM ASSEMBLIES WITH-OUT POLE TOP PIN

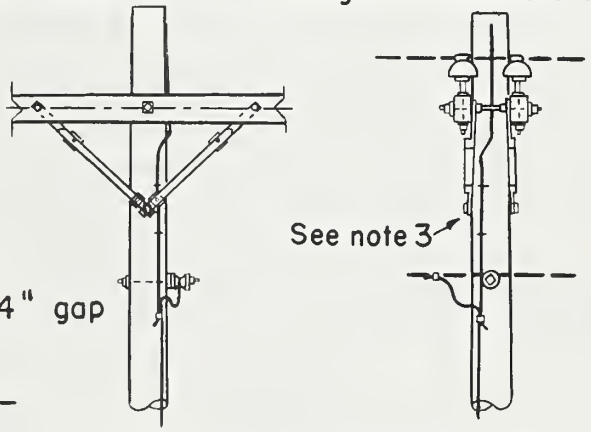
NOTES:

1. A solid conductor should be used for the pole top extension wire.
2. The jumper wire on system grounding assemblies should be stranded.
3. Position of staple is important. Maintain 4" minimum distance from staple or clip to lag screw or eye bolt.
4. Maintain 2" minimum spacing between ground wire and hardware associated with energized conductors.

Section X-X



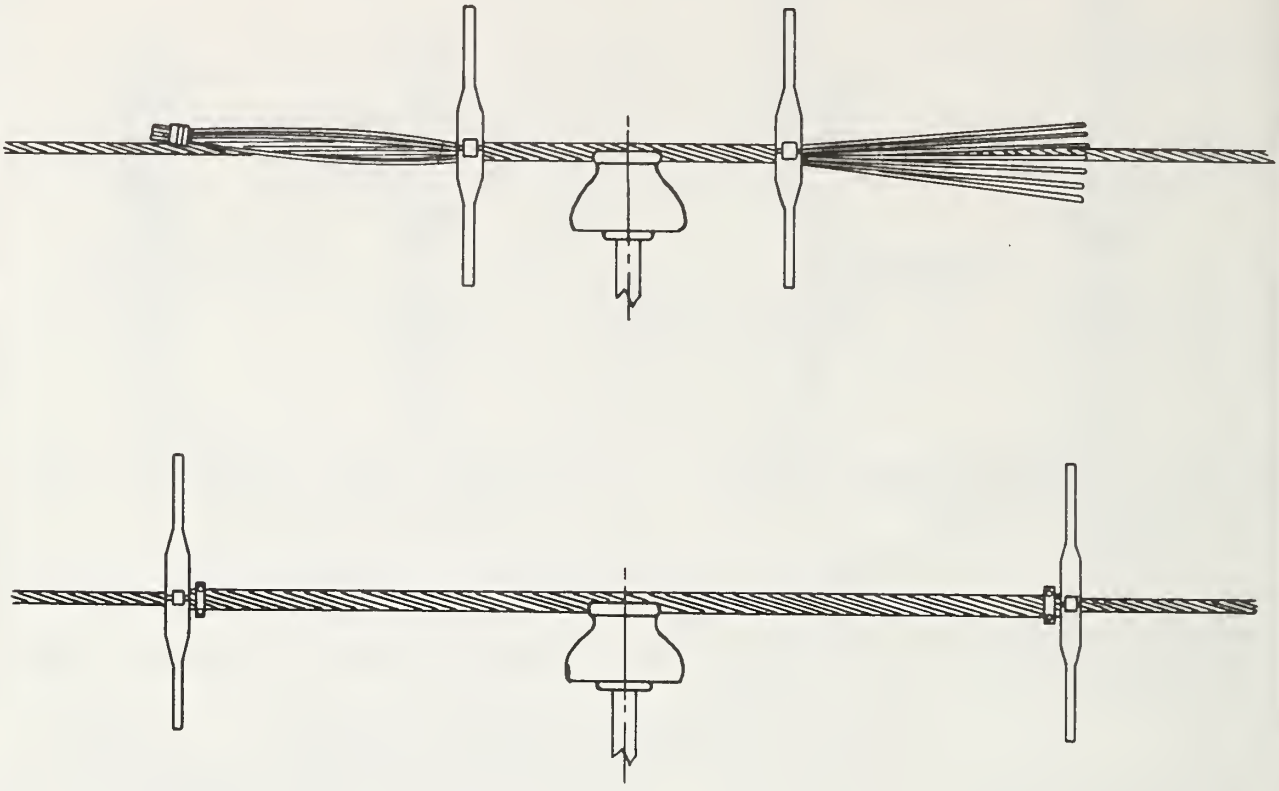
AT DOUBLE ARM ASSEMBLIES WITH POLE TOP PINS



AT DOUBLE ARM ASSEMBLIES WITHOUT POLE TOP PINS

12.5/7.2 kV
GUIDE FOR INSTALLATION OF GROUND WIRE ABOVE NEUTRAL ON POLES WITH BUTT WRAPPED OR DRIVEN GROUNDS

Apr., 1983		M30-2



Note:

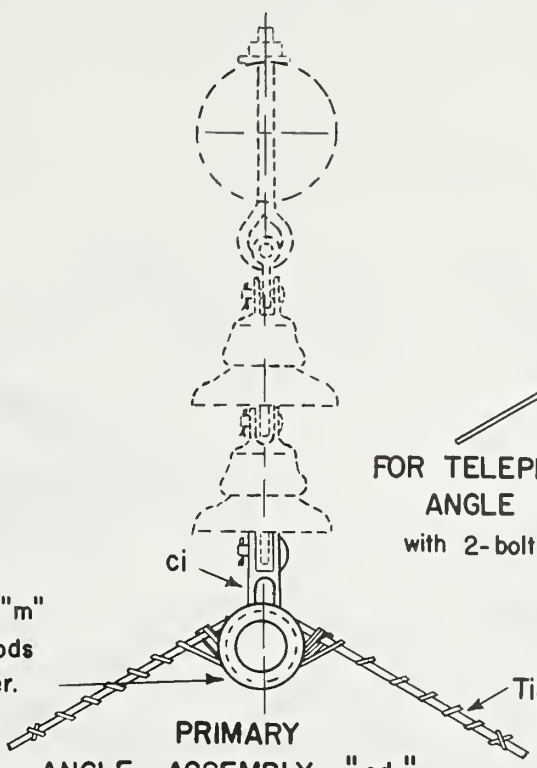
With tape still on one end of rods and other end threaded through wrenches so they open between the same two rods, center on conductor over point of support and close around conductor as shown above. Twist rods enough to give permanent set. Remove tape and slide wrenches half way to ends and repeat. Move wrenches to end of rods and twist Attach clips and tighten before removing so end of rods will flare after removal. Rods should be twisted snugly with a smooth lay in same direction as lay of conductor. For further information and method of installing rods on angle see manufacturer's instructions for Construction.

Conductor Size	Support	
	Single	Double
	Twists	
#4 A.C.S.R.(6Al/1St.)&(7Al/1St.)	5-6	7-8
#2 A.C.S.R.(6Al/1St.)&(7Al/1St.)	6-7	8-9
# 1/0 A.C.S.R. (6Al/1St.)	4-5	6-7
# 2/0 A.C.S.R. (6Al/1St.)	5-6	7-8
# 3/0 A.C.S.R. (6Al/1St.)	5-6	7-8
# 4/0 A.C.S.R. (6Al/1St.)	5-6	7-8

ARMOR RODS
A.C.S.R. CONDUCTOR

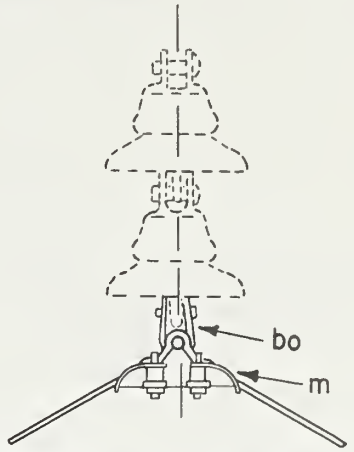
Apr., 1983

M40-11



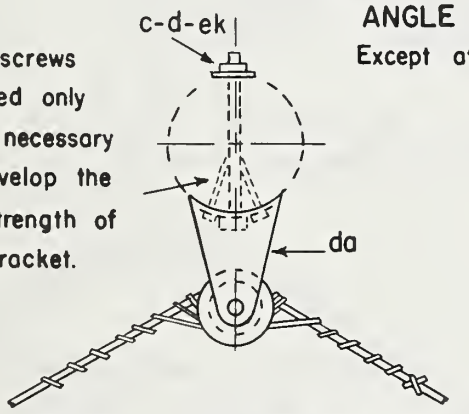
PRIMARY
ANGLE ASSEMBLY "cd"
Except at telephone crossings

Use suspension clamp item "m" for conductors with armor rods exceeding 3/4" overall diameter.

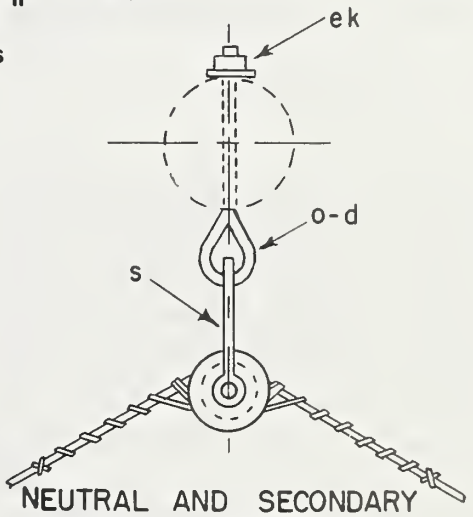


FOR TELEPHONE CROSSING
ANGLE ASSEMBLY "cd"
with 2-bolt suspension clamp

Lag screws required only when necessary to develop the full strength of the bracket.



NEUTRAL AND SECONDARY
ASSEMBLY "ce"
Except at crossings of railroad tracks and limited access highways.



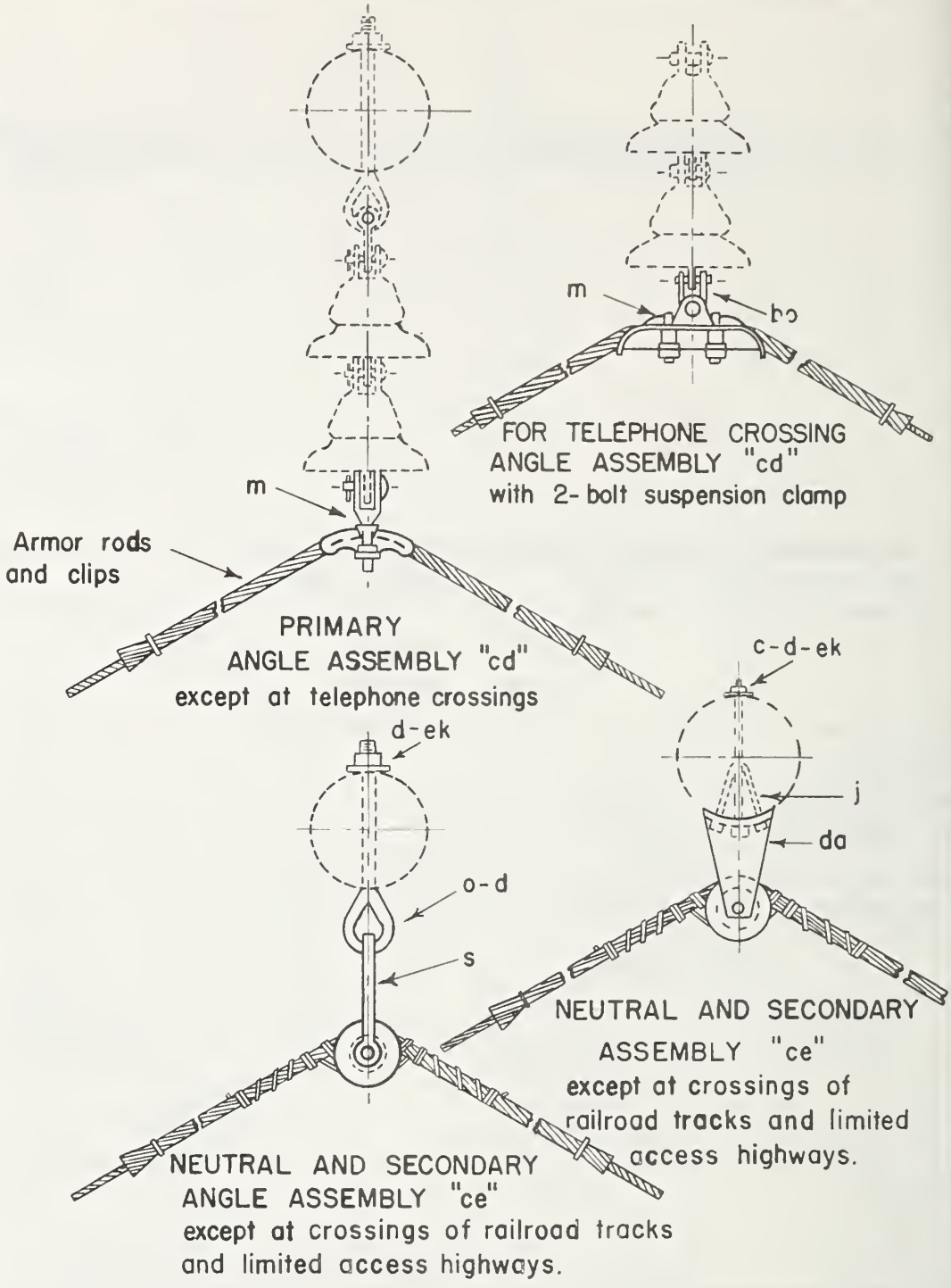
NEUTRAL AND SECONDARY
ANGLE ASSEMBLY "ce"
Except at crossings of railroad tracks and limited access highways.

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
c		Bolt, machine, 5/8" x req'd. length		ba		Shackle, anchor	
m		Clamp, suspension		da		Bracket, insulated	
				ci		Clevis, thimble, side opening	
s		Clevis, secondary, swinging, insulated					
ek		Locknuts, as required					
d		Washer, square, 2 1/4"					
j		Screw, lag, 1/2"x 4"					
o		Bolt, eye, 5/8"x req'd. length					

ANGLE ASSEMBLY GUIDE, VERTICAL CONSTRUCTION 30° TO 60° ANGLE, COPPER TYPE CONDUCTORS WITH FORMED TYPE ARMOR RODS

Apr., 1983

M 41-1

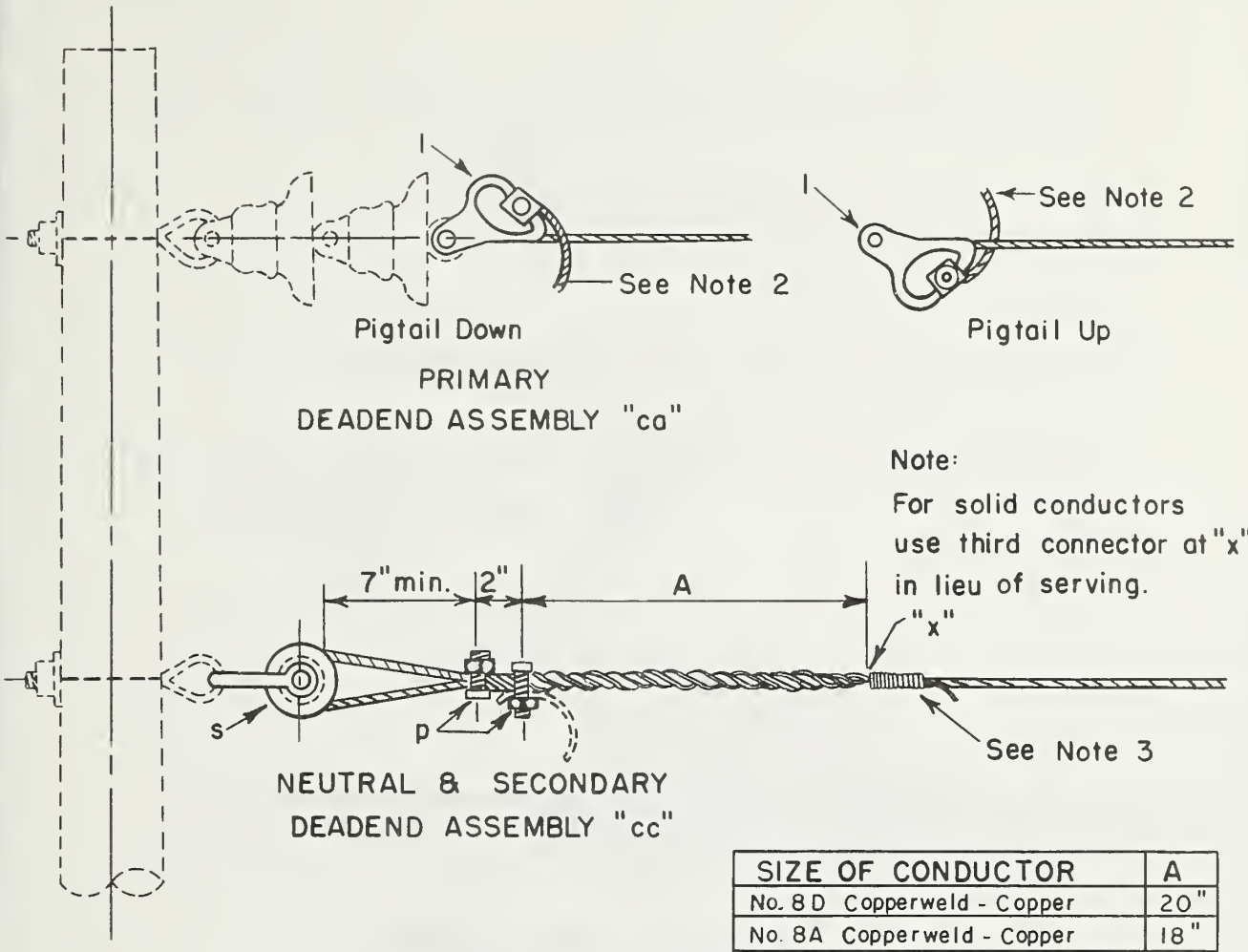


ITEM	NO.	MATERIAL	ITEM	NO.	MATERIAL
c		Bolt, machine, 5/8" x req'd. length	bo		Shackle, anchor
m		Clamp, suspension	da		Bracket, insulated
s		Clevis, secondary, swinging, insulated	o		Bolt, eye, 5/8" x required length
ek		Locknuts, as required			
d		Washer, square, 2 1/4"			
j		Screw, lag, 1/2" x 4"			

ANGLE ASSEMBLY GUIDE, VERTICAL CONSTRUCTION 30° TO 60° ANGLE, ACSR CONDUCTORS WITH STRAIGHT OR FORMED TYPE ARMOR RODS

Apr., 1983

M41-10



SIZE OF CONDUCTOR	A
No. 8 D Copperweld - Copper	20"
No. 8A Copperweld - Copper	18"
No. 6A Copperweld - Copper	20"
No. 4A Copperweld - Copper	22"
No. 2 Copper, 3 - Strand	22"

Notes:

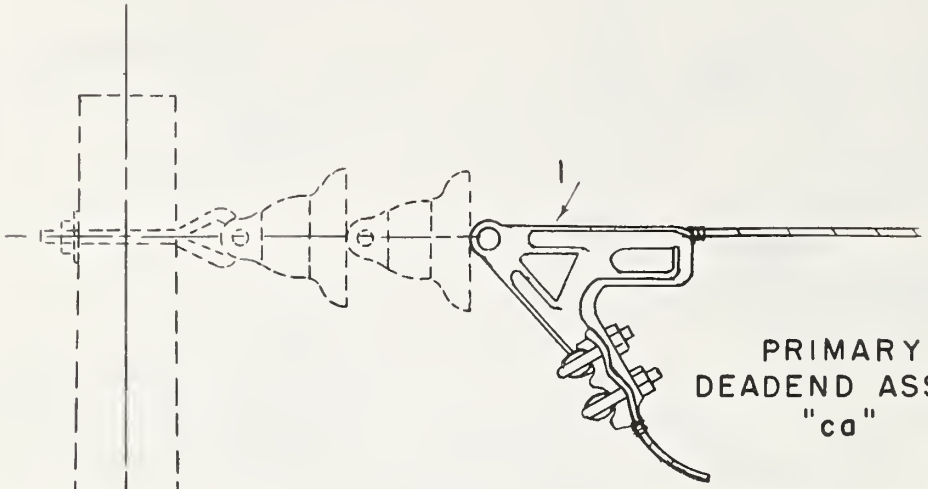
1. - For alternate method of deadending primary conductors, see Drawing M 42 - 21.
2. - Bend pigtail away from line conductor to avoid chafing.
3. - Wrap free end of conductor along line conductor using same lay. Extend one strand of free end (for copperweld - copper this is the copperweld strand) against line conductor. Serve the other two strands six turns each and cut them off. (Always serve copper strand (s) first.) Bend extended strand away from line conductor and cut off.

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
l		Clamp, deadend		s		Clevis, secondary, swinging, insul.	
p		Connectors, as req'd					

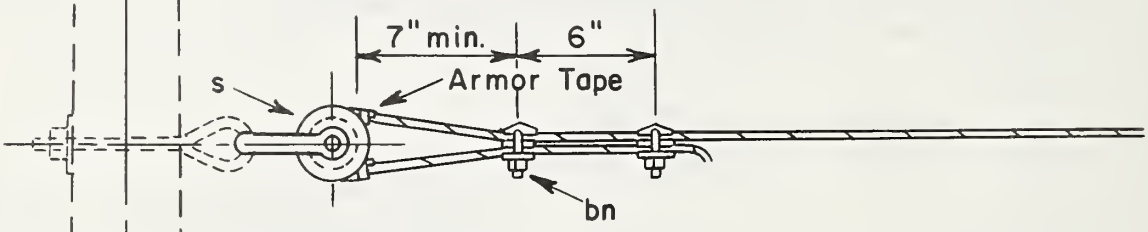
DEADEND ASSEMBLY GUIDE - DEADEND CLAMP METH.
COPPERWELD COPPER & COPPER CONDUCTORS

Apr., 1983

M42-3



PRIMARY
DEADEND ASSEMBLY
"ca"



NEUTRAL AND SECONDARY
DEADEND ASSEMBLY "cc"

Notes:

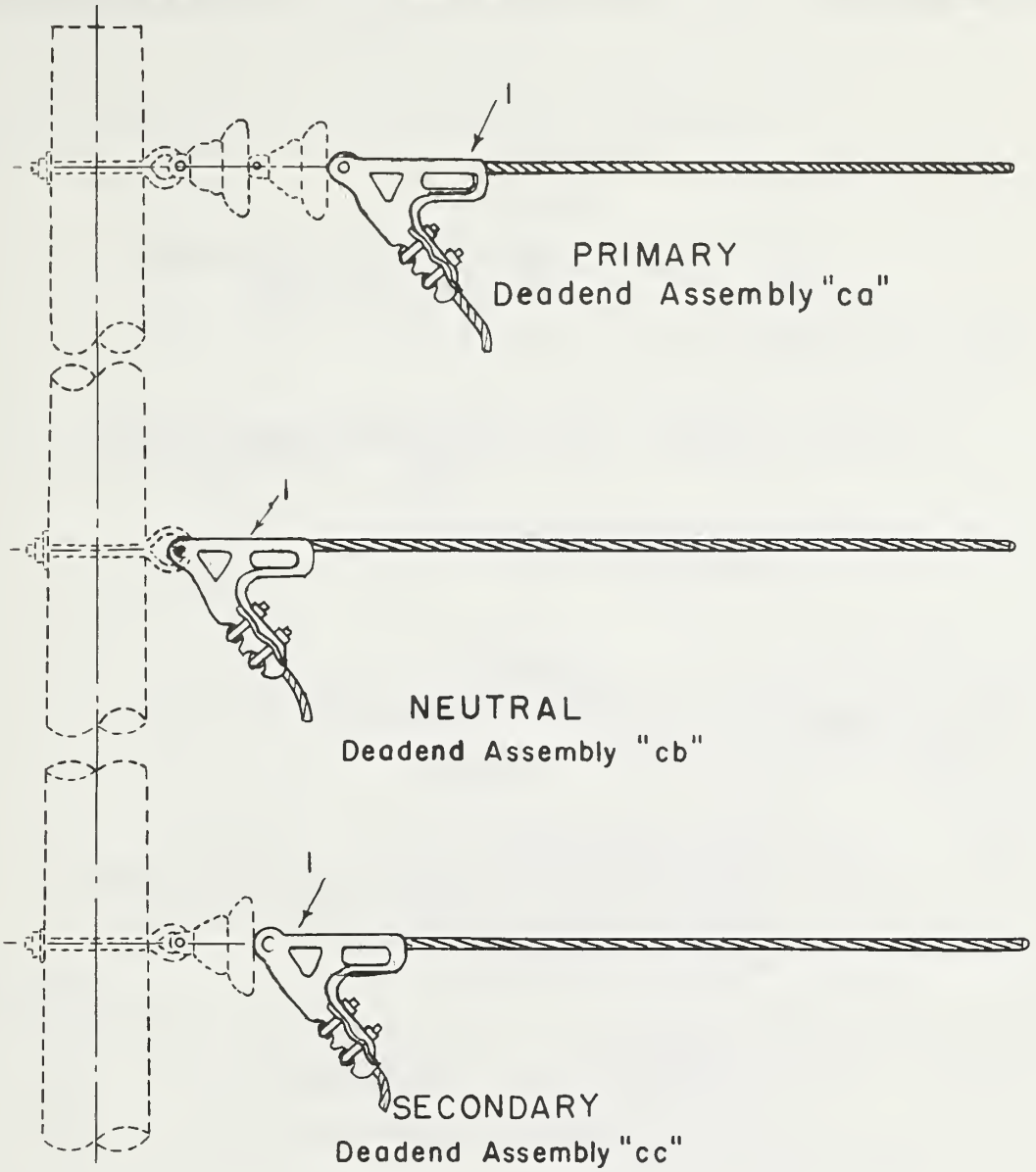
1. - Armor tape wrapping to extend not more than two wraps beyond the mouth of deadend clamp or spool insulator.
2. For 1/0 and larger use spool of 3" min. groove diameter on neutral and secondary deadends.

ITEM		MATERIAL		ITEM		MATERIAL	
l		Clamp, deadend					
s		Clevis, secondary, swinging, insulated					
bn		Clamp, loop deadend					

DEADEND ASSEMBLY GUIDE
DEADEND CLAMP METHOD
A.C.S.R. CONDUCTORS

Apr., 1983

M42-11



ITEM	NO. REQ'D	MATERIAL		ITEM	NO. REQ'D	MATERIAL	
1		Clamp, deadend					

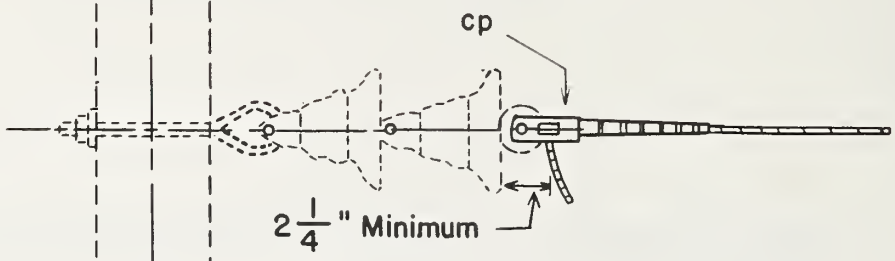
DEADEND ASSEMBLY GUIDE (LARGE CONDUCTORS)

Apr., 1983

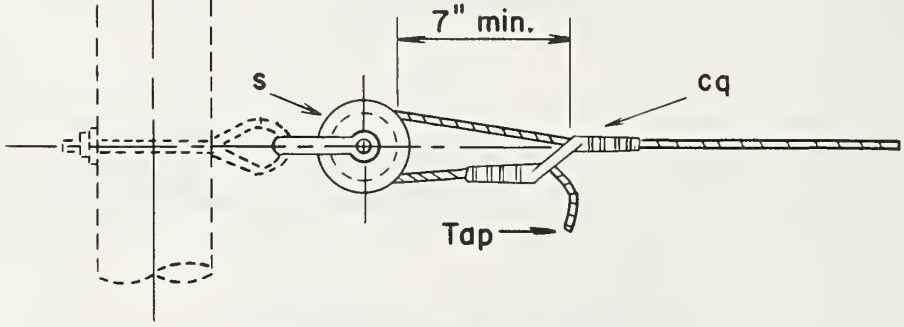
M42-13

Note:

Item "by" may be substituted for item "cp" shown.



PRIMARY
DEADEND ASSEMBLY "ca"



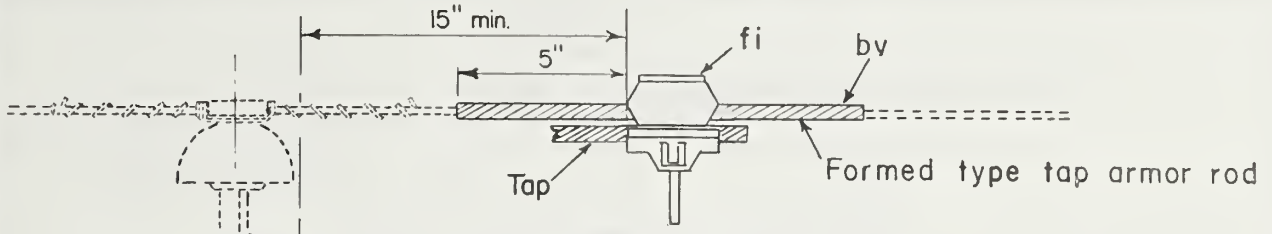
NEUTRAL AND SECONDARY
DEADEND ASSEMBLY "cc"

ITEM	NO. REQD	MATERIAL	ITEM	NO. REQD	MATERIAL
s		Clevis, secondary, swinging, insulated	cq		Sleeve, offset, splicing
cp		Sleeve, deadend, compression			

DEADEND ASSEMBLY GUIDE-COMPRESSION METHOD
COPPER TYPE CONDUCTORS

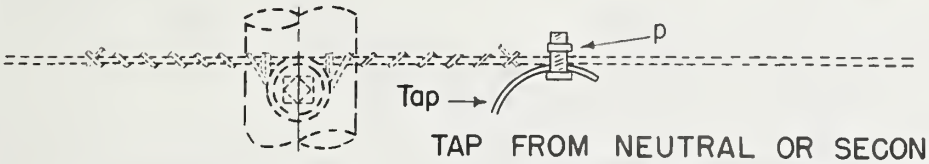
Apr., 1983

M42-21

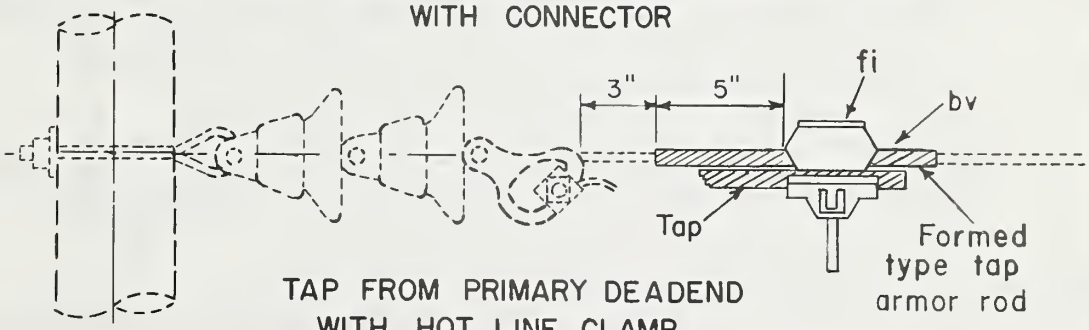


TAP FROM PRIMARY LINE

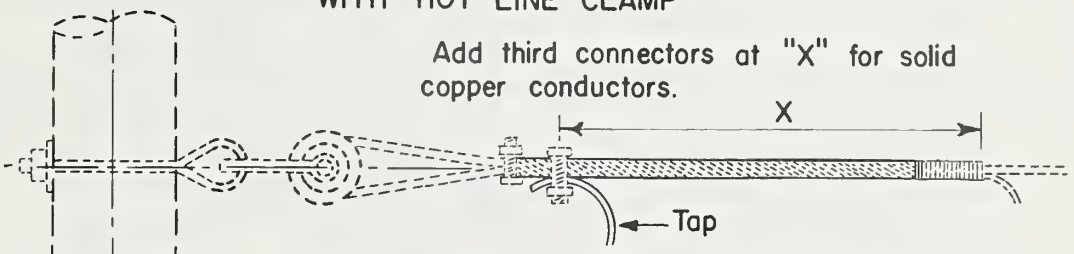
Note:
To be used on existing construction where full length armor rods were not installed.



TAP FROM NEUTRAL OR SECONDARY LINE WITH CONNECTOR



TAP FROM PRIMARY DEADEND WITH HOT LINE CLAMP



TAP FROM NEUTRAL OR SECONDARY DEADEND

Notes:

1. Arrangement shown on M42-11 may be used for neutral and secondary deadend if preferred.
2. When installing armor rods on existing lines, both conductor and armor rods should be wire brushed to provide clean contact surfaces. A corrosion inhibitor should be applied before or immediately after brushing.
3. Taps to be slack.

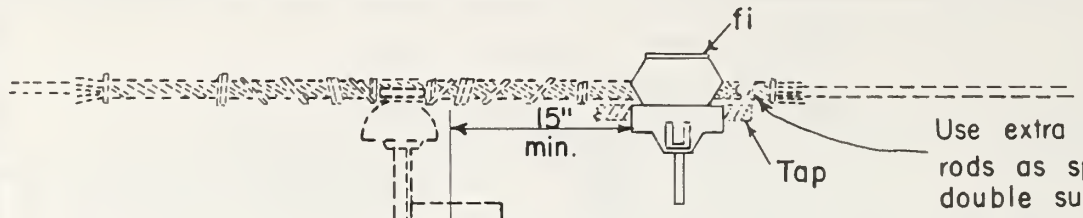
Size of solid conductor	X
No. 6 Copper	18"
No. 4 Copper	20"

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
p		Connectors, as required		bv		Tap armor rods, bronze	
fi		Connector, hot line, tap assembly					

TAP ASSEMBLY GUIDE
COPPERWELD-COPPER AND COPPER CONDUCTORS

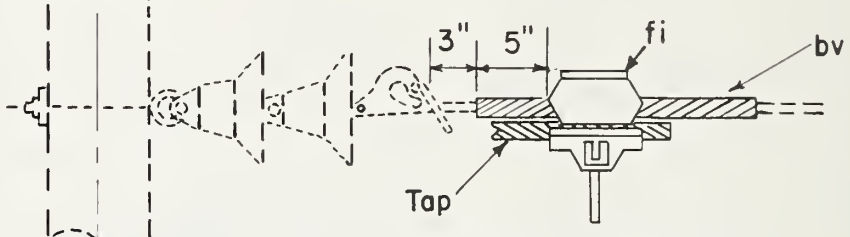
Apr., 1983

M43-4

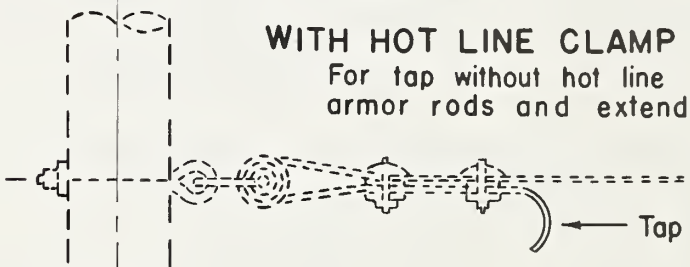


TAP FROM PRIMARY LINE
WITH HOT LINE CLAMP

TAP FROM NEUTRAL OR SECONDARY LINE
WITH CONNECTOR



TAP FROM PRIMARY DEADEND
WITH HOT LINE CLAMP
For tap without hot line clamp omit armor rods and extend pigtail.



TAP FROM NEUTRAL OR SECONDARY DEADEND

Notes:

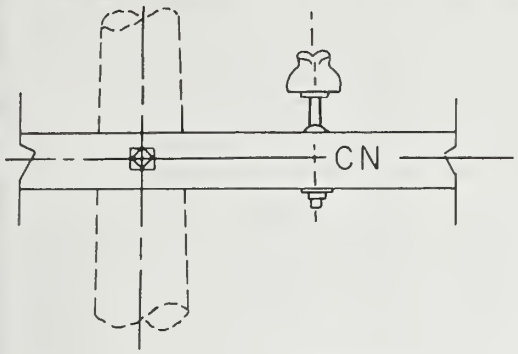
1. On new construction, top may be made directly over armor rods provided conductor is thoroughly cleaned and inhibitor used before installing rods.
2. When installing armor rods on existing lines, conductor should be wire brushed thoroughly and inhibitor used before installing rods.

ITEM	NO.	MATERIAL		ITEM	NO.	MATERIAL	
p		Connector		bv		Tap armor rods, formed type	
fi		Connector, hot line, tap assembly					

TAP ASSEMBLY GUIDE
A.C.S.R. CONDUCTORS

Apr., 1983

M43-10

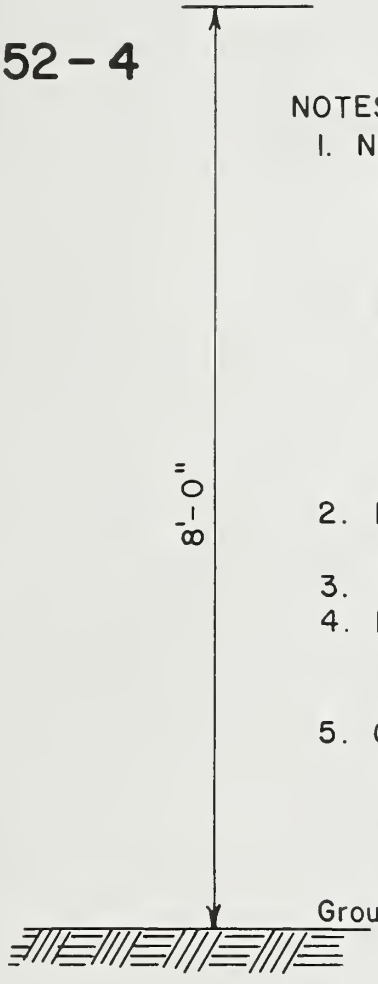


1A 23

May be placed
1 A
2 3
instead of as shown

M52-4

M52-3



NOTES:

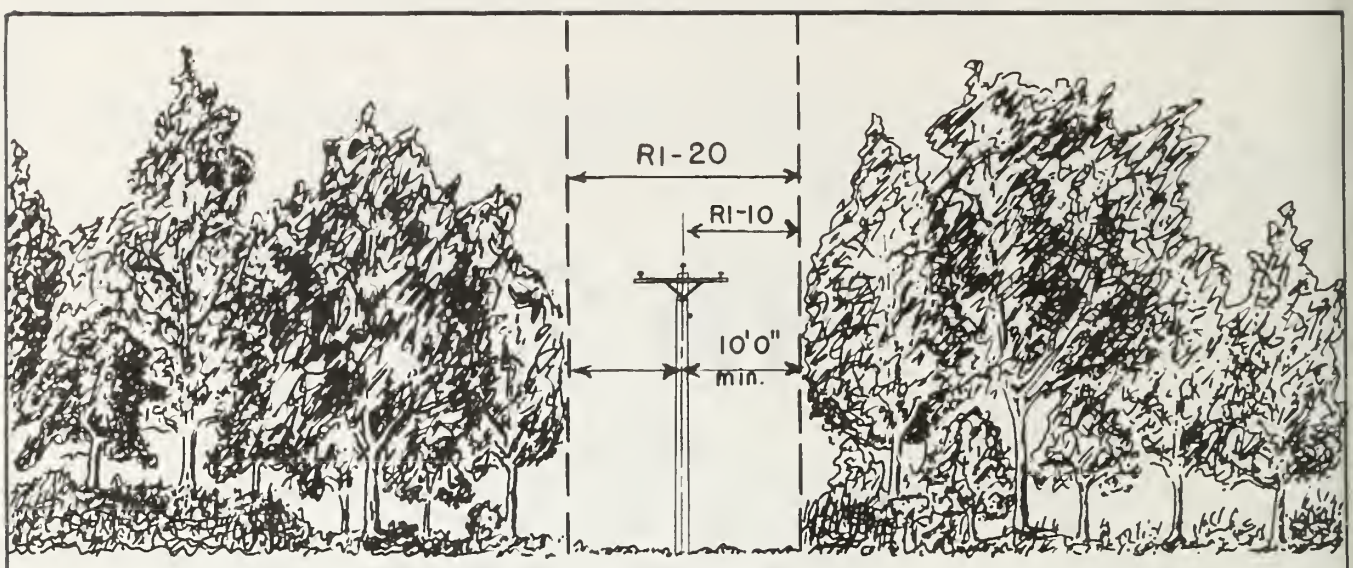
1. Numbers and letters shall:
   a) be of cutout aluminum or electrogalvanized soft steel, fastened to pole with galvanized or aluminum barbed 1" round head nails; or
   b) be either die stamped or printed with a reflectorized background on individual pieces of aluminum and mounted in an aluminum holder and fastened to pole with aluminum barbed round head nails. If numbers smaller than 1-1/2" are used, they shall be reflectorized.
2. Pole legends to be 1-1/2" to 3" high. Reflectorized numbers and letters may be 1" to 3" high.
3. "CN" to be 2" high.
4. Pole to be staggered 30° from direct facing highway. When line crosses highway or R.R., legend should face same.
5. On poles having limited climbing space due to special equipment, pole legend should be so located as to leave climbing space quadrant unobstructed.

ITEM	NO.	MATERIAL			MATERIAL
az		Pole numbers and letters as required			
ee		Letters "CN" with 1" nails			

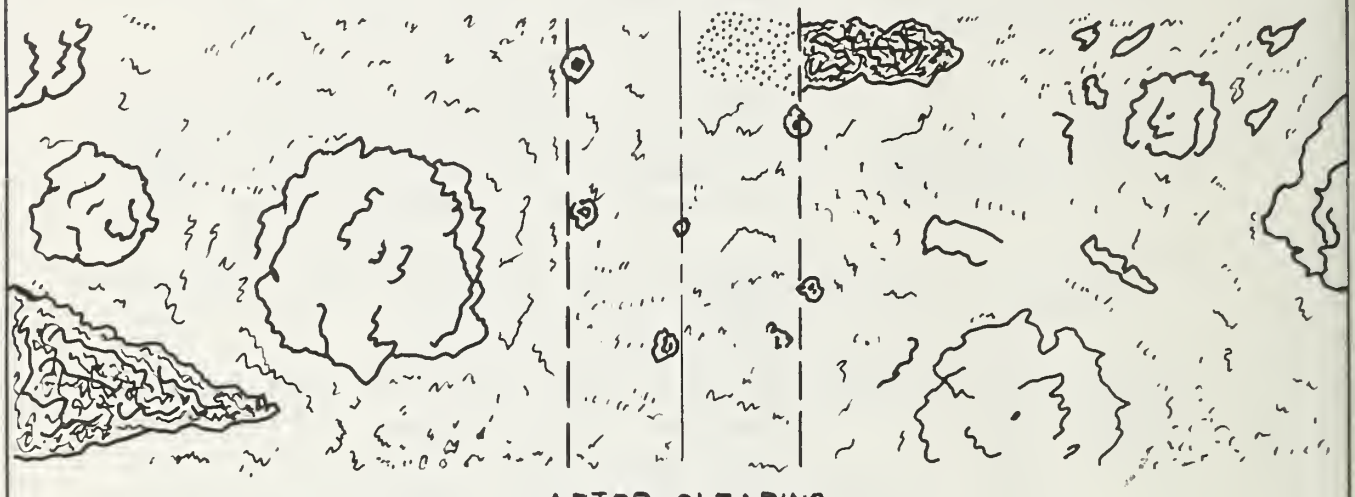
NEUTRAL IDENTIFICATION AND POLE NUMBERING GUIDE

Apr., 1983

M52-3, M52-4



ELEVATION



AFTER CLEARING

BEFORE CLEARING

CLEARING RIGHT-OF-WAY GUIDE

Apr., 1983

RI